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Alpine Flora of the Canadian Rocky Mountains

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Mimulus Lewisii Pursh. (⅔ Nat.)

Flora

Alpine Flora

of the

Canadian Rocky Mountains

By

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Illustrated with Water-Colour Drawings and Photographs

By

Mrs. Charles Schäffer

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OFFERED TO THE LOVERS OF ALPINE
FLORÆ IN THE MEMORY OF DR. CHARLES
SCHÄFFER OF PHILADELPHIA, WHO WAS
AMONG THE PIONEER BOTANISTS OF THE
CANADIAN ROCKIES, AND WHO EARLY
RECOGNISED THIS REGION AS A NEW
AND INTERESTING FIELD FOR STUDY

PREFACE

The present volume, though prepared in manual form, is meant only as a guide to the rich and interesting flora of the Canadian Rockies and Selkirks or those portions traversed by the Canadian Pacific Railway between Banff and Glacier. While many of the plants herein described are found throughout the entire region, yet the species characteristic of the two mountain ranges are vastly different. For the most part those of the Rockies might be characterised as plants adapted to the withstanding of severe conditions of drouth and cold, being mostly low and tufted, with small surfaces of leaf exposure, either thick and leathery or in many instances with an ample covering of protecting hairs; while those of the Selkirks, owing to the more humid atmospheric conditions, are essen-

tially moisture-loving forms, with a luxuriant growth of stems and leaves; it is only where the conditions are similar in the two regions that we find the same or similar forms existing. Few of the more characteristic Rocky Mountain species extend west of the divide, while of those of the Selkirks, few extend east of it, except where there is a luxuriant forest growth, with the consequent retention of moisture, and then only at altitudes of from 2000 to 3000 feet greater.

Contrasting the plants of this region with those of the European Alps it is interesting to note, that while the species are for the most part vastly different, yet there is a certain close resemblance in the families and genera which are represented; the Anemones are here, but not in the scarlets and crimsons, running more to whites and purples, and so are the Buttercups, dwarf many of them, but with large, showy flowers; the Saxifrages and Drabas are innumerable as are the Vetches and also the Heaths, but

the latter with fewer and very different species. Some plants, however, like the White Mountain Avens (*Dryas octopetala*), the Butterwort (*Pinguicula vulgaris*), the Moss Campion (*Silene acaulis*), the Mountain Cranberry (*Vitis-idæa*) and the Low Cranberry (*Oxycoccus*), the One-flowered Wintergreen (*Moneses uniflora*), the Forget-me-not (*Myosotis alpestris*) and others are found on both sides of the Atlantic, yet we have no such array of Primroses or Gentians as our European brothers, though both genera are represented with us, while on the other hand they can boast of nothing comparable to our Indian Paint Brush, found throughout the region on the river-shores and bars during late June and early July and later through the summer in its innumerable forms and colours in the moist alpine meadows and slopes.

The ferns and their allies with the more striking of the trees and shrubs have been included in the present work, together with the

majority of the herbaceous flowering plants, though some of the largely represented but less striking groups such as the Grasses, Sedges, and Willows have been entirely omitted, not seeming of sufficient general interest to warrant the space required for their intelligent treatment. The species are arranged in accordance with their scientific relationships, with keys to the genera and a general key to the families. Among the illustrations herein contained, many of the plants of the Northwest are figured for the first time.

Acknowledgment is here made to Messrs. David McNicoll, Robert Kerr, and other officials and employees of the Canadian Pacific Railway Company through whose courtesy was made possible the gathering of the data for the basis of this work.

S. B.

Academy of Natural Sciences,
Philadelphia, October 28, 1907.

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GLOSSARY

ACAULESCENT: with stem so short that leaves appear to arise directly from root.

ACHENE: a small, dry, one-seeded indehiscent, seed-like fruit.

ACUMINATE: tapering gradually to a point.

ACUTE: with an abrupt point.

ADNATE: growing together as the stamens with the petals, or the anthers with the filament.

ALTERNATE: (leaves) not opposite but arising at different points on the stem. Stamens are alternate with petals when they are situated in the intervals.

ANTHER: the part of the stamen which contains the pollen.

APICAL: pertaining to the top or apex.

AURICULATE: with ear-like appendages at base.

AXIAL: pertaining to an axis.

BILABIATE: two-lipped.

BLADE: the expanded portion of a leaf.

BRACT: a modified and usually small leaf at the base of a flower or flower-cluster. In the latter case it is usually associated with others.

BRACTEOLATE: furnished with small bracts.

CÆSPITOSE: growing in tufts.

CALYX: the outer whorl of floral leaves forming usually a green cup.

CAMPANULATE: bell-shaped.

CANESCENT: greyish-white, due usually to fine hairs.

CAPILLARY: hair-like.

CAPITATE: arranged in a head; knob-like.

CAPSULE: a dry, dehiscent seed-vessel.

CARPEL: a pistil-leaf. The pistil is regarded as being composed of one or more such carpels.

CATKIN: the scaly, cylindrical flower-cluster of Willow, Birch, etc.

CAUDATE: with a tail-like appendage.

CAUDEX: the perennial rootstock of an otherwise annual plant.

CHARTACEOUS: papery or parchment-like.

CILIATE: fringed with marginal hairs.

CINEREOUS: ashen or greyish.

CLEISTOGAMIC: (flowers) never opening as the late flowers of violets, etc.

CONNATE: united.

CORDATE: heart-shaped.

CORIACEOUS: leathery.

CORM: a solid bulb.

CORYMBOSE: with a flat-topped or convex flower-cluster, the flower-stalks of which arise at different points on the axis, and of which the outermost flowers are the oldest.

CRENATE: with rounded teeth.

CRENULATE: with small rounded teeth.

CUNEATE: wedge-shaped.

CUSPIDATE: ending in a sharp, hard point.

CYME: a flat-topped or convex flower-cluster, the flower-stalks of which arise at different points on the axis, and of which the innermost flowers are the oldest.

DECIDUOUS: subject to fall, as leaves of most trees and calyx and corolla of most flowers before the fruit forms.

DECUMBENT: (stems) reclining on the ground with summit tending to rise.

DECURRENT: (leaves) with base prolonged below insertion and forming a sort of wing.

DELTOID: broadly triangular.

DENTATE: toothed, usually with teeth projecting outwards.

DENTICULATE: with little, outwardly projecting teeth.

DIŒCIOUS: having staminate and pistillate flowers on separate plants.

DISC: the central part of a head as opposed to the ray, *e. g.*, in the sun-flower. Also a fleshy expansion of the receptacle of the flower.

DRUPE: a stone-fruit.

DRUPELET: a small stone-fruit.

ELLIPTIC: with the outline of an ellipse.

ENTIRE: with the margin even and not toothed, lobed, or divided.

EROSE: irregularly margined.

FIMBRIATE: fringed.

FLOCCOSE: with loose tufts of wool-like hairs.

FOLIACEOUS: leaf-like.

FOLLICLE: a fruit of one carpel (pistil-leaf) which splits only by one suture.

FUSIFORM: spindle-shaped.

GALEA: a helmet-shaped body.

GLANDULAR: with small prominences which appear to have a secreting function.

GLAUCOUS: covered with a bluish or white bloom.

GLOBOSE: spherical.

INCISED: sharply and irregularly cut into.

INDUSIUM: the membrane covering the fruit-dots of ferns.

INFERIOR: (side of flower) the one away from the axis of the flower-cluster; (ovary) united with the calyx-tube, the other floral parts apparently growing from its summit.

INFLORESCENCE: the mode of arrangement of flowers on the stem; the flower-cluster.

INTERNODE: the portion of the stem between the places where the leaves arise.

INVOLUCRE: a whorl of small leaves at the base of a flower or flower-cluster.

KEEL: the lower petals of the peculiar corolla of the pea, etc., which are united in the form of the keel of a boat.

LACINIATE: with deep, triangular, narrow lobes.

LANATE: woolly.

LANCEOLATE: narrow and tapering at each end.

LATERAL: pertaining to the side.

LEAFLET: one of the divisions of the blade of a compound leaf.

LINEAR: narrow and flat with the margins parallel.

LYRATE: lyre-shaped.

MONŒCIOUS: having the separate staminate and pistillate flowers on the same plant.

MUCRONATE: with a short, abrupt point.

NODE: the point of the stem from which one or more leaves arise.

OBLANCEOLATE: lance-shaped with the base tapering downwards.

OBTUSE: blunt.

ORBICULAR: circular.

OVATE: egg-shaped (applied to flat bodies).

OVOID: egg-shaped (applied to solids).

PALMATE: (compound leaf) with the divisions so arranged that they radiate from the petiole like the fingers of the hand.

PANICLE: a branched, flower-cluster with the older flowers outermost.

PANICULATE: with much branched open flower clusters.

Papillæ: minute, blunt projections.
Pappus: the bristles, awns, or hairs which crown the fruit of the Composites.
Parietal: (placentæ) attached to the wall of the ovary.
Peduncle: a flower-stalk.
Perennial: lasting from year to year.
Perfoliate: (leaves) having the basal part so extended and united as to make it appear as though the stem grew through them.
Perianth: the calyx and corolla collectively.
Petal: a corolla-leaf.
Petaloid: petal-like.
Petiole: the leaf-stalk.
Pinnæ: the primary divisions of a compound leaf.
Pinnate: compound with leaflets arranged along a common axis.
Pinnatifid: pinnately cleft.
Pinnules: secondary pinnæ.
Placentæ: the parts of the ovary to which the seeds are attached.
Plumose: feathery.
Pollen: the fertilising powder of the anther.
Polygamous: having both perfect and imperfect flowers.
Prostrate: lying flat on the ground.
Puberulent: covered with tiny almost imperceptible hairs.
Pulvini: cushions or pads.
Raceme: a flower-cluster in which the stalked flowers are arranged along an elongated axis.
Racemose: raceme-like.
Rachis: the axis.
Radical: arising from the root, or portion of the stem resembling the root.
Receptacle: the usually somewhat enlarged portion

of the stem on which parts of a flower or of a flower-cluster are borne.

RENIFORM: kidney-shaped.

REPAND: wavy-margined.

RETICULATE: arranged like a network.

REVOLUTE: rolled backward.

RHIZOME: an underground stem; a rootstock.

RHOMBIC: having the shape of a four-sided figure with parallel and equal sides which may be either perpendicular or oblique to each other.

RHOMBOID: of a somewhat rhombic shape.

ROTATE: wheel-shaped.

RUNCINATE: coarsely cut into with the segments turned backward.

SAGITTATE: shaped like an arrow-head with the lobes turned downward.

SAMARA: a simple, indehiscent, winged fruit.

SAPROPHYTE: a plant which grows on dead organic matter.

SCALE: a minute, rudimentary leaf.

SCAPE: a leafless or nearly leafless flower-stalk arising from near the ground.

SCARIOUS: dry, thin, membranous.

SCURF: minute scales on the epidermis (skin).

SEPALS: the divisions of the calyx.

SERRATE: with teeth pointing forwards.

SERRULATE: with minute forward pointing teeth.

SESSILE: (leaf) without any stalk.

SHEATH: a tubular structure such as is formed by the lower part of the leaves of grasses, etc.

SILICLE: a short and broad silique.

SILIQUE: the elongated two-valved and usually dehiscent fruit of the Cress family. It is divided by a partition and the placentæ are parietal.

SINUATE: with a strongly wavy margin.

Sinus: the recess between the lobes of a leaf.
Sori: the fruit-dots of ferns.
Spadix: a fleshy spike as in the Araceæ.
Spathe: a large bract or pair of bracts enclosing a flower or an inflorescence.
Spatulate: spoon-shaped.
Spike: a flower-cluster in which the flowers are stalkless on an elongated axis.
Sporanges: the sacs containing the spores.
Spore: the reproductive body of ferns.
Sporophyll: leaf-like organ or receptacle containing spores.
Stamen: the organ of the flower which produces the pollen.
Staminodia: sterile stamens or structures which are developed in the place of stamens.
Stellate: star-shaped.
Stipe: the leaf-stalk of a fern.
Stipule: an appendage such as is found at the base of many leaf-stalks.
Stolon: a trailing and rooting shoot.
Striate: marked with slender, longitudinal stripes.
Strict: straight and upright.
Style: (of pistil) the elongated portion at top of ovary.
Subulate: awl-shaped.
Superior: (side of flower) the one next the axis of a flower-cluster; (ovary) free from calyx tube.
Terete: cylindrical, circular in cross-section.
Ternate: in threes.
Tomentose: clothed with matted wool-like hairs.
Torulose: knobby; swollen at intervals.
Truncate: as if cut off at the top.
Tubercle: a small knob-like outgrowth.
Turbinate: top-shaped.
Umbel: an umbrella-like flower-cluster.

UNDULATE: wavy.
VALVATE: (leaves in bud) meeting by the margins, not overlapping.
VERTICILLATE: whorled.
VEXILLUM: the standard of the peculiar flower of pea, etc.
VILLOUS: with long soft hairs.

GENERAL KEY TO THE FAMILIES

PLANTS WITHOUT FLOWERS

Ferns and their Allies

Leaves large, fern-like.

Sporanges in a spike or panicle above the sterile leaf. **Ophioglossaceæ.**

Sporanges borne in sori, on the backs or margins of the leaves. **Polypodiaceæ.**

Leaves small, reduced to scales.

Stems erect, hollow, jointed, rush-like; leaves reduced to sheaths at the joints; sporanges in the terminal, cone-like spike. **Equisetaceæ.**

Stems not hollow, creeping; leaves numerous, scale-like; sporanges of one kind, solitary in the axils of the leaves. **Lycopodiaceæ.**

Stems creeping, moss-like; leaves numerous; sporanges of two kinds in the axils of the upper leaves, which are formed into a quadrangular spike. **Selaginellaceæ.**

PLANTS WITH FLOWERS

Woody Stemmed Plants; Trees, Shrubs, and Vines

TREES OR SHRUBS WITH RESINOUS JUICE; LEAVES USUALLY EVERGREEN.

Fruit a cone, either dry or berry-like. **Pinaceæ.**

Fruit a fleshy crimson berry. **Taxaceæ.**

TREES, SHRUBS, OR VINES WITH WATERY JUICE.

Leaves deciduous.

Flowers in catkins.

Staminate and pistillate catkins on different plants; seed with white, silky hairs. **Salicaceæ.**

Staminate and pistillate catkins on the same plant; fruit cone-like. **Betulaceæ.**

Flowers not in catkins.

(A) Trees.

Leaves simple, not lobed; flowers white. **Drupaceæ.**

Leaves lobed; flowers greenish-yellow. **Aceraceæ.**

Leaves pinnate; flowers white. **Pomaceæ.**

(B) Shrubs or vines.

*Stems spiny erect or trailing.

(*a*) Leaves simple or lobed.

Flowers small in dense terminal racemes. **Araliaceæ.**

Flowers few in axillary clusters or racemes. **Grossulariaceæ.**

(*b*) Leaves pinnate or palmate. **Rosaceæ.**

Stems not spiny but with minute scales; fruit silver, scarlet or orange berries. **Elæagnaceæ.

***Stems erect, smooth.

(*a*) Petals distinct.

†Leaves simple.

Flowers small, in flat heads or clusters.

Petals 4; stamens 4. **Cornaceæ.**

Petals 5; stamens numerous. **Rosaceæ.**

Flowers in axillary clusters or racemes; petals 5; stamens numerous.
Fruit a berry. **Drupaceæ.**
Fruit a pome. **Pomaceæ.**
††Leaves pinnate; flowers yellow. **Rosaceæ.**
(*b*) Petals united.
Flowers small, short-campanulate in axillary or terminal heads. **Caprifoliaceæ.**
Flowers large, funnelform, in terminal or axillary clusters (*Azaleastrum*) **Ericaceæ.**
Flowers bell or urn-shaped, few, axillary. **Vacciniaceæ.**
****Stems creeping or twining, smooth or hairy.
Flowers with distinct petals, blue or purple. (*Atragene*). **Ranunculaceæ.**
Flowers with united petals.
Corolla tubular. **Caprifoliaceæ.**
Corolla bell-shaped. **Ericaceæ.**

Leaves evergreen; shrubs or vines.
Leaves pinnate; flowers yellow. **Berberidaceæ.**
Leaves simple.
Flowers inconspicuous; fruit a black berry. **Empetraceæ.**
Flowers showy, open, campanulate or urn-shaped, white or pink. **Ericaceæ.**

Herbaceous Plants

Plants without leaves.
Parasitic on branches or stems of evergreens. **Loranthaceæ.**
Not parasitic on trees; roots coral-like. (*Corallorhiza*) **Orchidaceæ.**

Plants with leaves.

Leaves parallel-veined.

(A) Flowers small, collected on a spadix. **Araceæ.**

(B) Flowers not collected on a spadix.

*Flowers regular; corolla lobes 6; stamens 6.

(*a*) Leaves grass-like, mostly at the base.

Flowers white or greenish. **Melanthaceæ.**

Flowers pink. (*Allium*). **Liliaceæ.**

Flowers blue. (*Sisyrinchium*). **Iridaceæ.**

(*b*) Leaves not grass-like, mostly on the stem.

Flowers white or pink. **Convallariaceæ.**

Flowers green. **Melanthaceæ.**

Flowers yellow or orange. **Liliaceæ.**

Flowers red or wine-color. (*Kruhsea.*) **Convallariaceæ.**

Flowers irregular, frequently with broad or inflated lip and spur. **Orchidaceæ.

Leaves not parallel-veined.

(A) Flowers small, in close heads surrounded by an involucre.

Flowers all alike, florets ligulate. **Cichoriaceæ.**

Flowers not alike, central ones tubular, marginal usually with rays. **Carduaceæ**

(B) Flowers in umbels at the ends of the stems or branches.

Umbels broad, flat or nearly so, flowers white, yellow, or purple. **Apiaceæ.**

Umbels round.

Flowers greenish; leaves compound. **Araliaceæ.**

Flowers white or pink; leaves simple. (*Eriogonum.*) **Polygonaceæ.**

(C) Flowers not in umbels.

*Flowers regular.

(*a*) Flowers with 2 sepals and 5 petals; corolla pink. **Portulacaceæ.**

(*b*) Flowers with 3 sepals and 3 petals; seeds triangular. **Polygonaceæ.**

(*c*) Flowers with 4 sepals and 4 petals. Stem angular; leaves in whorls. **Rubiaceæ.**

Stem round; leaves not in whorls.

Stamens 6, erect. **Brassicaceæ.**

Stamens 8, spreading. **Onagraceæ.**

(*d*) Flowers with 5 sepals or petals, distinct.

†Stamens as many or twice as many as the corolla lobes.

Stems swollen at the nodes. **Caryophyllaceæ.**

Stems not swollen at the nodes.

Stem leaves numerous, entire, thin; flowers in terminal or axillary clusters, white or greenish. **Santalaceæ.**

Leaves basal, entire; flowers solitary on a 1-leaved scape. **Parnassiaceæ.**

Leaves mostly basal, lobed or cut; flowers in a close spike or head. **Saxifragaceæ.**

Leaves and stems fleshy.

Follicles 2. **Saxifragaceæ.**

Follicles 4. **Crassulaceæ.**

Leaves numerous, stiff, awl-shaped; stems low, tufted **Saxifragaceæ.**

††Stamens more than twice as many as the corolla lobes.

§Leaves basal or mostly so.

Leaves evergreen, simple or lobed, flowers yellow or white, solitary on naked scapes. (*Dryas.*) **Rosaceæ.**

Leaves not evergreen, simple, lobed, or much divided.
Smooth.
Stems erect or floating. **Ranunculaceæ.**
Stems creeping.
Flowers white or pink. **Rosaceæ.**
Flowers yellow. **Ranunculaceæ.**
Rough-hairy.
Flowers yellow or pink. **Rosaceæ.**
Flowers white, blue or purple. **Ranunculaceæ.**
§§Leaves mostly on the stem.
Leaves finely cut; stems creeping; flowers white. **Rosaceæ.**
Leaves entire.
Leaves bright green, black dotted; flowers yellow. **Hypericaceæ.**
Leaves glaucous, without black dots; flowers blue. **Linaceæ.**
(*e*) Flowers with 5 sepals and 5 united petals or lobes.
†Stamens 3; flowers small, in terminal clusters. **Valerianaceæ.**
††Stamens 5.
Opposite to the corolla lobes. **Primulaceæ.**
Alternate with the corolla lobes.
Stems smooth, leafy; corolla campanulate.
Stem leaves broad; flowers pink. **Apocynaceæ.**
Stem leaves narrow; flowers blue **Campanulaceæ.**

Stems rough-hairy.

Corolla salver-form; stamens included. **Boraginaceæ.**

Corolla tubular; stamens exserted. **Hydrophyllaceæ.**

†††Stamens 10; flowers mostly in terminal heads or singly. **Pyrolaceæ.**

**Flowers irregular.

(*a*) Leaves all entire and basal, forming rosettes; flowers blue. **Lentibulariaceæ.**

(*b*) Leaves all heart-shaped; flowers blue, white or yellow. **Violaceæ.**

(*c*) Leaves not heart-shaped, simple or much cut, not pinnate.

Stems square; flowers in close verticels in the axils of the leaves or in terminal heads. **Menthaceæ.**

Stems round; flowers numerous in elongated terminal leafy heads or few on slender stems in the axils of the upper leaves. **Scrophulariaceæ.**

(*d*) Leaves palmate; flowers blue in elongated spikes. **Ranunculaceæ.**

(*e*) Leaves pinnately divided; flowers pea-like. **Papilionaceæ.**

(*f*) Leaves compoundly lobed, not pinnate.

Stems low, spreading, flowers small in dense terminal or axillary spikes. **Papaveraceæ.**

Stems erect; flowers drooping in open terminal heads, either showy and spurred or not showy and without spurs; leaves maiden-hair fern-like. **Ranunculaceæ.**

Alpine Flora of the Canadian Rocky Mountains

Ophioglossaceæ

Adder's-Tongue Family

More or less succulent fern-like plants, consisting of a stem and leaf growing from a fleshy root. Sporophyll in the form of a spike or panicle.

Botrychium lunaria (L.) Sw. *Moon-wort.* Very fleshy, 2–12 inches high. Leaf usually sessile, borne at or above the middle of the stem, pinnate with 2–8 pairs of moon-like or fan-shaped lobes which vary from crenate to entire and either close and folded together or distant; spore-bearing portion

2–3 pinnate, often dense, 1–2 inches long, about as high as the leaf.

In open or exposed situations, frequently on the tops of the highest mountains, rather rare; occurring in midsummer.

Botrychium simplex E. Hitchcock. *Small Moonwort.*

Plant 2–6 inches high, slender and very variable. Leaf ovate, obovate or oblong, entire, lobed or pinnately parted, borne near the base of the stem; spore-bearing portion a simple or slightly compound spike, sometimes reduced to only a few sporanges; apex of the leaf and spore-bearing portion erect in fruit.

In alpine meadows or grassy slopes, frequently through the Rockies but very inconspicuous; during summer.

Botrychium virginianum (L.) Sw. *Virginia Grape Fern.*

Stem slender, 4 inches to 2 feet high. Leaf thin, ternately divided and spreading 3–12 inches across, pinnately much divided into oblong-toothed segments; spore-bearing portion long-stalked, much

above the leaf 2–3 pinnate, cinnamon brown, when ripe.

In rich moist woods, sparingly throughout the region during the summer.

Polypodiaceæ

Fern Family

Ferns of various habits, the rootstocks horizontal, often elongated or short and erect; the leaves simple, pinnate, pinnatifid or decompound, coiled at the ends when young. Sporanges borne in clusters (*sori*) on the lower side or margins of the leaves or their segments, with or without a membranous covering (*indusium*).

Represented in the region by the following 10 genera.

Sori without indusia, leaves 2–3 pinnate or ternate. **Phegopteris.**

Sori with marginal indusia formed by the more or less altered edge of the leaf.

Sporanges at the ends of the veins, borne on a reflexed portion of the leaf. **Adiantum.**

Sporanges on a continuous vein-like receptacle which connects the apices of the veins. **Pteridium.**

Sporanges at or near the ends of the unconnected veins.

Leaves of two kinds, the spore-bearing ones contracted and more or less pod-like. **Cryptogramma.**

Leaves uniform; sori minute, indusium usually interrupted. **Cheilanthes.**

Sori not marginal, provided with spinal indusia.

Sori oblong on oblique veins; leaves pinnate. **Asplenium.**

Sori round.

Indusium conspicuous.

Leaves firm; indusium peltate. **Polystichum.**

Leaves membranous; indusium reniform. **Dryopteris.**

Indusium inconspicuous.

Indusium under the sorus, stellately divided. **Woodsia.**

Indusium hooded, fixed by a broad base. **Filix.**

Phegopteris alpestris (Hoppe) Mett. *Western Beech Fern.*

Rootstock short, thick, erect or oblique; stems 4–10 inches long with a few brown spreading scales near the base; leaves 1–2 feet long, oblong-lanceolate, thrice pinnate, the pinnæ deltoid-lanceolate, the lower ones distant and smaller, pinnules oblong-lanceolate, finely cut-toothed; sori small, rounded and nearly marginal.

On moist banks in the Selkirks, frequent especially in the vicinity of Glacier, where it forms clumps of considerable diameter, up to 7000 feet elevation.

Phegopteris Phegopteris (L.) Underw. *Long Beech Fern.*

Rootstock slender and creeping; stems 6–9 inches long; leaves triangular, thin, usually longer than broad, 6–9 inches long, 4–6 inches broad, hairy on the veins, especially beneath; pinnæ linear-lanceolate, the lowest pair deflexed and standing forward, segments oblong, obtuse, entire, the basal ones joined to the main rachis; sori small, near the margin.

In moist woods in the Selkirks at the lower elevations, not common.

Phegopteris Dryopteris (L.) Fée. *Oak Fern.*

Rootstock slender, extensively creeping; leaves or short black stipes, broadly triangular 4–8 inches wide, the three primary divisions 1–2 pinnate, segments oblong, obtuse, entire or toothed; sori near the margin.

In moist woods and thickets throughout

the region at the lower altitudes, frequently forming beds of considerable size.

Adiantum pedatum L. *Maidenhair Fern.*

Rootstock slender, creeping; stems 9–18 inches long, dark chestnut brown or nearly black, shining, forked into nearly equal branches at the summit; leaves obliquely orbicular in outline, 8–18 inches broad, thin, the pinnæ arising from the branches of the stem, somewhat radiately arranged, the larger ones 6–10 inches long, 1–2 inches broad, pinnules triangular-oblong, or the terminal one fan-shaped, the lower margin entire and slightly curved, the upper cut, bearing the linear-oblong sori.

Sparingly throughout the region in woods or moist shaded situations, among rocks.

Pteridium aquilinum pubescens Underw. *Bracken.*

Rootstock stout, widely creeping, subterranean; stems hairy, 1–2 feet high, erect, straw-colored or brownish, leaves soft hairy, especially on the under surface,

2–4 feet long, 1–3 feet wide, ternate, the three branches each bipinnate, the upper pinnules undivided, the lower more or less pinnatifid.

In dry woods, thickets, and open hillsides, throughout the region.

Cryptogramma acrostichoides R. Br. *American Rock-brake.*

Rootstock stout, short, and chaffy; stems densely tufted, straw-colored, 2–6 inches long, very slender, chaffy below; leaves ovate or ovate-lanceolate in outline, thin, smooth, 2–3 pinnate, the sterile shorter than the fertile, their segments and pinnules crowded, ovate-oblong or obovate, crenate or slightly sharply cut; fertile leaves with linear or linear oblong segments half an inch long, the margins at first rolled back to the midrib, at maturity expanded and exposing the light brown sporanges.

Forming tufts among rocks throughout the region but most frequent in the Selkirks.

Cryptogramma Stelleri (S. G. Gmel.) Prantl. *Slender Cliff-brake*

Rootstock slender, creeping, thread-like; stems slender, scattered 2–3 inches long, dark brown; leaves thin, ovate in outline 2–5 inches long, 1–2 inches wide, 2–3 pinnate or pinnatifid above, the fertile taller, with narrower pinnules and segments, pinnæ lanceolate-deltoid, cut to the rachis, in few lobed or entire segments; indusium broad; veins conspicuous.

In crevices of damp or dripping rocks, preferably limestone, in the Rockies up to 7000 feet elevation; not common.

Cheilanthes Féei Moore. *Hairy Lip Fern.*

Rootstock creeping, covered with pale rusty-brown scales; stems tufted, wiry, chestnut brown, 2–4 inches long, hairy; leaves oblong-lanceolate in outline 4–9 inches long, gradually attenuate to the apex, twice pinnate; pinnules somewhat distant, lanceolate-deltoid, acute, deeply pinnatifid or incised, more or less covered with stiff

hairs and usually somewhat glandular; sori numerous, covered by the infolded ends of the rounded oblong lobes.

On rocks and among broken stones at the lower altitudes of the eastern Rockies; growing in matted masses.

Asplenium viride Huds. *Green Spleenwort.*

Rootstock stout, creeping, chaffy with brown scales; stems numerous, densely tufted, brownish below, green above; leaves linear-lanceolate, 2–8 inches long, once pinnate, pale green, with 12–20 pairs of ovate or rhomboid, crenate, obtuse, unequal-sided pinnules; sori oblong, numerous, or scattered.

On dry rocks and slides, frequent through the Rockies.

Asplenium Filix-fœmina (L.) Bernh. *Lady Fern.*

Rootstock creeping, rather slender for the size of the plant; stems tufted, 6–10 inches long; straw-colored, brownish or reddish, with scattered brown scales which are large and numerous at the broadened base; leaves broadly oblong-lanceolate,

pinnæ lanceolate, acuminate, 4–8 inches long; pinnules lanceolate, incised or serrate, sori short, the indusia straight or variously curved.

In moist woods and thickets throughout the region but especially in the Selkirks, being a common fern in the woods in the vicinity of Glacier.

Polystichum Lonchitis (L.) Roth. *Holly Fern.*

Rootstock short, stout, and densely chaffy; stems 1–5 inches long, bearing large dark-brown scales, with some smaller ones; leaves rigid, leathery, and evergreen, narrowly lanceolate in outline, once pinnate; pinnæ broadly lanceolate, scythe-shaped, 1–2 inches long, acute or acuminate at the apex, with an ear-like projection on the upper side at the base, and with a nearly straight edge on the lower, densely spiny-toothed; sori large, nearer the margin than the midrib.

In large tufts among rocks throughout the region.

Dryopteris Filix-mas (L.) Schott. *Male Fern.*

Rootstock stout, ascending, or erect, chaffy; stems 4–6 inches long, very chaffy below; leaves broadly lanceolate, acute or acuminate at the apex, slightly narrowed at the base, 1–3 feet long, rather firm, half evergreen, pinnate or partly 2-pinnate; pinnæ lanceolate, broadest at the base, gradually acuminate, 3–6 inches long, pinnatifid almost to the rachis, or pinnately divided into oblong, smooth lobes; sori large, borne near the margin, more numerous on the lower halves of the segments.

In rocky woods in the Selkirks on the lower slopes of Mt. Macdonald.

Dryopteris spinulosa dilatata (Hoffm.) Underw. *Spinulose Shield Fern.*

Rootstock stout, chaffy; stems 6–18 inches long, bearing large brown scales with dark centres; leaves broadly ovate or triangular ovate, commonly 3-pinnate; pinnules lanceolate-oblong, the lowest often much elongated; sori medium size; indusium smooth.

In moist woods through the Selkirks,

probably the most abundant fern in the vicinity of Glacier.

Dryopteris oreopteris (Sw.) Maxon.

Rootstock short, erect or decumbent, scaly; stems light straw-colored, 2–6 inches long, tufted, copiously scaly throughout, with light brown scales; leaves 1½–2 feet long, rather firm, broadly-lanceolate, gradually tapering from near the middle to both ends; pinnæ 2–3 inches long, deeply pinnatifid, gradually shorter to the lowest which are more distant, broadly triangular, and less than an inch long; segments flat, oblong, and nearly entire; rachis straw-colored, densely scaly with light brown scales, nearly to the apex.

In the Selkirks on the moist mountain slopes and rocky ravines at Glacier.

Woodsia scopulina D. C. Eaton. *Rocky Mountain Woodsia.*

Rootstock short, creeping, and densely chaffy; stems brown, darker at the base, 2–4 inches long, glandular-hairy; leaves mostly glandular-hairy through-

out, lanceolate, 6–12 inches long, tapering from about the middle to both ends; pinnæ numerous, oblong-ovate, pinnatifid into oblong-toothed segments; sori nearly marginal.

In crevices in the rocks and among broken stones on slides, throughout the Rockies, up to an elevation of 7000 feet; frequent.

Woodsia oregana D. C. Eaton. *Oregon Woodsia.* Rootstock short; stems smooth, brownish below. Leaves smooth, 2–10 inches long, lanceolate; pinnæ triangular, oblong, obtuse, pinnatifid, lower ones rounded and somewhat remote from the others; rachis straw-colored; pinnules oblong-ovate, dentate or crenate, the teeth often turned back and covering the submarginal sori.

Among broken stones on the slides near the base of Mt. Stephen in the Rockies.

Filix fragilis (L.) Underw. *Brittle Fern.* Rootstock short; stems 4–8 inches long, leaves thin, smooth throughout, oblong-lanceolate, only slightly tapering below, 4–10 inches long; pinnate or 2–3 pinnatifid;

pinnæ lanceolate-ovate, irregularly pinnatifid with a broad central space, and bluntly or sharply toothed segments, decurrent along the margined or winged rachis; sori small, half way between the margin and the midrib; indusium narrow, soon withering.

In crevices in rocks and among broken stones throughout the Rockies.

Filix montana (Lam.) Underw. Rootstock slender, widely creeping; stipes 6–9 inches long, slender; leaves deltoid-ovate, 3–4 pinnate, 3–6 inches broad, the lowest pinnæ triangular-lanceolate and much larger, their inferior pinnules 1–1½ inches long, deeply divided into oblong lobes, deeply toothed; sori numerous; indusium acute, soon withering.

On damp mossy banks and rocks throughout the Rockies; not common.

Equisetaceæ

Horsetail Family

Green, rush-like plants with usually hollow,

jointed, simple or often much branched stems, rising from subterranean rootstocks; the branches verticillate.

Leaves reduced to toothed sheaths; sporanges clustered beneath the scales of terminal, cone-like spikes.

Equisetum arvense L. *Field Horsetail.* Stems annual, the fertile appearing in early spring before the sterile; fertile stems 4–10 inches high, soon withering, light brown, their loose sheaths mostly distant, whitish, ending in about 12 brown acuminate teeth; sterile stems green, much branched and slender, 2 inches to 2 feet high with numerous, mostly simple, 4-angled solid branches with 4-toothed sheaths.

In moist sandy soil throughout the region, frequent in wet woods and swampy places.

Equisetum sylvaticum L. *Wood Horsetail.* Stems annual, the fertile appearing in early spring before the sterile, at first simple, at length much branched, resembling the sterile except in the withered apex;

stems 8–20 inches high, producing verticillate compound branches which are curved downward; sheaths loose and cylindric, those of the stem whitish, with 8–14 rather blunt brown teeth.

In moist sandy woods and thickets in the Selkirks, not common.

Equisetum fluviatile L. *Swamp Horsetail.*

Stems annual, all alike, 2–4 feet high, bluish green, smooth, usually producing upright branches after the spores are formed; sheaths appressed with about 18 dark brown or nearly black, short acute teeth.

In sloughs and shallow ponds throughout the region, frequent.

Equisetum hyemale L. *Common Scouring-rush.*

Stems stiff, evergreen, 2–4 feet high, rough, 8–34-furrowed, the ridges with two distinct lines of tubercles; sheaths rather long, cylindric, marked with one or two black girdles, teeth dark brown or nearly black and membranous, soon deciduous; spikes tipped with a rigid point.

In wet places and on banks and slides in the valley of the Kicking Horse River.

Equisetum variegatum Schl. *Variegated Equisetum.* Stems perennial, slender, evergreen, 6–18 inches long, rough, usually simple from a branched base, commonly tufted, 5–10 furrowed; sheaths companulate, distinctly 4-keeled, green variegated with black above; the teeth 5–10, each tipped with a deciduous bristle.

In moist, sandy soil throughout the region up to an elevation of 7000 feet, sometimes forming large patches.

Equisetum scirpoides Michx. Stems perennial, evergreen, very slender, 3–6 inches long, rough, flexuous and curving, growing in tufts closely matted to the ground, mostly 6-furrowed with acute ridges, simple or branching from near the base; sheaths black, with three membranous rather persistent bristle-tipped teeth.

On moist sandy shaded banks throughout the Rockies.

Lycopodiaceæ

Club-moss Family

Branching, moss-like plants with small lanceolate or subulate, sometimes oblong or roundish simple leaves, arranged in two or many ranks on trailing or sometimes erect, usually branched stems.

Sporanges solitary in the axils of the leaves or on their upper surfaces.

Lycopodium Selago L. *Fir Club-moss.* Stems usually yellowish throughout, 3–6 inches high, thick, rigid, erect, 2–5 times forked, the branches forming a level topped cluster; leaves crowded, uniform, ascending, elongated, lanceolate with a spiny tip, the upper mostly 8-ranked and sterile, those below bearing small sporanges in their axils, leaves of the lower half of the stems again sterile; plant propagated also by enlarged bud-like organs.

Throughout the region in alpine meadows and slopes above 6000 feet elevation.

Lycopodium annotinum L. *Stiff Club-moss.* Stems much branched, slender, prostrate and creeping, rather stiff, 1–4 feet long, the branches similar, ascending 5–8 inches high, sparingly forked; leaves uniform, spreading, 5-ranked, rigid, linear-lanceolate, minutely serrulate, nerved below, spikes solitary or several at the ends of the branches, oblong, cylindric 1–1½ inches long, composed of ovate or ovate-cordate, short acuminate and denticulate bracts, each with a sporange in its axil.

In woods throughout the region, frequent.

Lycopodium clavatum L. *Running Pine.* Stems extensively creeping, 1–4 feet long with similar short, irregular ascending or decumbent, densely leafy branches; leaves much crowded, many ranked, incurved, linear-subulate, bristle-tipped, the lower denticulate, the upper nearly entire or slightly decurrent on either side; spikes 1–4 on long peduncles; bracts membranous, roundish, and irregularly denticulate below.

In dry woods and open grounds, rather rare in the region, observed only in the Selkirks around Glacier and Roger's Pass.

Lycopodium sitchensis Rupr. *Arctic Club-moss.*

Stems prostrate, 8–12 inches long, on or a little beneath the surface; sending up frequent branched stems which form compact masses of vertical, compressed branches 2–3 inches high, with occasional stronger, spike-bearing branches; leaves lanceolate with a broad base, spreading and curving upwards, thick, entire, acute, in five rows on the branchlets; the spikes nearly sessile.

On grassy alpine slopes 6000 feet and upwards in the Selkirks, especially in the region about Glacier.

Lycopodium complanatum L. *Trailing Christmas-green.*

Stems extensively creeping, with erect or ascending reinform or fan-shaped branches, several times forked above with crowded flattened branchlets; leaves minute, overlapping, flattened,

4-ranked, the lateral row with somewhat spreading tips; peduncle slender, 2–6 inches high, forked, bearing 2–4 linear-cylindric spikes, bracts broadly ovate, acuminate, with pale irregularly cut margins.

In mossy woods at the lower altitudes, more or less frequent throughout the region, especially in the Rockies.

Lycopodium alpinum L. *Alpine Club-moss.*

Stems prostrate, 8–20 inches long on or near the surface of the ground, forming numerous, several times branched clusters 2–3 inches high with glaucous leaves, and occasional stouter, compressed spike-bearing stems, extending above the others; leaves 4-ranked, erect, flattened, those of the lateral rows two to three times larger than those intermediate; spikes sessile, few, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long.

In alpine meadows, on slopes, and in open woods throughout the region from 6000 feet upwards.

SELAGINELLACEÆ

Selaginella Family

Moss-like plants with branching stems and scale-like leaves which are many ranked and uniform, or 4-ranked and of two types spreading in two planes. Sporanges solitary in the axils of the leaves which are so arranged as to form more or less quadrangular spikes.

Selaginella selaginoides (L.) Link. *Low Selaginella.*

Sterile stems, prostrate and creeping, small and slender; fertile stems thicker, ascending, simple 1–3 inches high; leaves lanceolate, acute, spreading, sparsely spinulose-ciliate; spikes solitary at the ends of the fertile branches, bracts lax, ascending lanceolate or ovate-lanceolate, strongly fringed.

A light green moss-like plant growing in wet sandy grounds in the Rockies; not infrequent.

Selaginella densa Rydb. Densely tufted sterile branches very short and crowded; leaves, densely crowded, many-ranked linear or needle-shaped in age, slightly flattened and grooved on the upper side, the margin fringed, tipped with a white bristle; fertile branches erect, the spikes quadrangular $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, bracts folded together, thick, triangular-ovate, fringed on the margin and tipped with a white bristle half as long as that of the leaves.

In sterile dry ground and on exposed rocks throughout the region from the bases to the tops of the highest mountains, forming grayish-green mats on the ground.

Pinaceæ.

Pine Family

Resinous trees and shrubs mostly with evergreen, narrow, entire or scale-like leaves; the pollen sacks and ovules borne in separate spikes; fruit a cone with numerous, several

or few, woody, papery or fleshy scales, sometimes berry-like; seed wingless or winged.

Scales of the fruit numerous, alternate; leaf buds scaly.

Leaves in clusters.
Clusters ensheathed at the base, containing 2, 3, or 5 leaves. **Pinus.**
Clusters not ensheathed at the base containing many leaves. **Larix.**
Leaves solitary.
Cones erect; scales deciduous. **Abies.**
Cones pendent; scales persistent.
Branchlets smooth; bracts 3-toothed. **Pseudotsuga.**
Branchlets roughened by the persistent leaf bases.
Leaves petioled, not pungent. **Tsuga.**
Leaves sessile, pungent. **Picea.**

Scales of the fruit few, opposite; leaf buds naked.
Fruit fleshy and berry-like. **Juniperus.**
Fruit a dry cone. **Thuja.**

Pinus albicaulis Engelm. *White-bark Pine.*

A tree 20 or 30 feet high generally with a short trunk 2–4 feet in diameter, stout, very flexible branches, often standing nearly erect and forming an open irregular broad head; often a low shrub and nearly prostrate at high altitudes; bark

Pinus albicaulis Engelm. (¼ Nat.)
White Pine.

Pinus Murrayana Oreg. Com. (¼ Nat.)
Jack Pine.

thin with creamy-white plate-like scales; leaves stout, rigid, slightly incurved, clustered at the ends of the branches $1\frac{1}{2}$–$2\frac{1}{2}$ inches long; cones oval or subglobose horizontal, sessile, dark purple, $1\frac{1}{2}$–3 inches long with thickened acute scales.

On alpine slopes and exposed ridges from 5000 feet elevation upward, occurring occasionally in the Rockies, but frequent throughout the Selkirks at or near the timber line.

Pinus Murrayana Oreg. Com. *Black Pine, Jack Pine.*

A tree 40–80 feet high with a trunk 1–3 feet in diameter, slender, strict; branches frequently persistent nearly to the base of the stem, somewhat pendulous below, ascending near the top of the tree, forming a pyramidal spire-topped head; bark thin, close, light orange-brown with appressed scales; leaves 2 in a a bundle, yellowish green, 1–3 inches long, stout; cones yellowish-brown and shining oval to sub-cylindric oblique at the base, often

clustered ¾–2 inches long, with slightly concave scales with slender deciduous prickles.

The most abundant tree at the lower altitudes throughout the Rockies, frequently covering vast tracts, and rising on the mountain sides to 6000 feet or occasionally higher.

Larix Lyallii Parl. *Lyall's Larch.*

A tree usually 40–50 feet high with a diameter of 18–20 inches and remote, elongated, tough, persistent, nearly black branches, with prominent winter buds with conspicuous long white matted hairs fringing the margins of their scales and often nearly concealing the buds; bark on the old trunks ½ to ¾ of an inch thick, pale gray, divided into shallow irregular plates; leaves many in a cluster, 4-angled, slender, blue-green 1–1½ inches long; young cones showy with dark red or yellow-green scales and dark purple bracts; when mature, ovate 1½–2 inches long with reddish-purple scales and long tipped dark purple bracts.

An alpine tree occurring with more or

Larix Lyallii Parl. (⅛ Nat.)
Lyall's Larch.

Thuja plicata Don. (⅛ Nat.)
Giant Cedar.

less frequency throughout the Rockies from Banff to Field, from 6000 to 8000 feet elevation, at or near the tree limit, often much stunted and almost shrub-like; very abundant on the mountains in the region about Lake Louise.

Abies lasiocarpa (Hook) Nutt. *Subalpine Fir, Balsam Fir.*

A tree usually 40–100 feet high with a trunk 1–5 feet in diameter, short crowded tough branches, usually slightly pendulous near the base and forming dense spire-like slender heads; bark rough on the older trees, with thick, appressed, cinnamon-red scales; leaves pale blue-green flat, 1–1¾ inches long on the lower branches, rounded or notched at the apex; on the upper branches thickened, not more than ½ an inch long, flattened and closely appressed with long rigid points; cones, oblong-cylindric, rounded, truncate or depressed at the narrowed apex, dark purple and soft hairy, 1½–4 inches long with scales gradually narrowed from the broad rounded

apex to the base, about 3 times as long as the bracts.

This tree the Balsam of the region is found throughout on the higher mountain slopes and summits, frequently forming the timber line in which case it is shrub-like and stunted.

Pseudotsuga macronata (Raf.) Sudw. *Douglas Spruce, Red Fir.*

A magnificent tree 80–100 feet high, with a trunk 2–3 feet in diameter, or frequently larger, with slender crowded branches and long pendulous lateral ones forming, while the tree is young, an open pyramid, soon deciduous from the trees crowded in the forest and leaving the bare trunk naked for $\frac{2}{3}$ of its height and surmounted by a comparatively small, narrow head; bark on the young trees, smooth, dark gray-brown and lustrous, on the old trunks several inches thick, divided into oblong plates broken into irregularly connected ridges; leaves crowded, yellowish-green, straight or slightly curved, narrow, $\frac{3}{4}$–$1\frac{1}{4}$ inches long, obtuse or acute at the

Abies lasiocarpa (Hook.) Nutt. (⅛ Nat.)
Balsam Fir.

Pseudotsuga mucronata (Raf.) Sudw. (¼ Nat.)
Douglas Fir.

apex; cones pendent on long stout stems, 2–4¼ inches long, with thin slightly concave scales; bracts often extending half an inch beyond the scales.

Throughout the Rockies in the lower wooded valleys, the handsomest tree of this section especially when young, now rather rare in the mature state along the line of the railway, but may be so seen to perfection in the Yoho and some of the other outlying valleys.

Tsuga heterophylla (Raf.) Sarg. *Western Hemlock.*

A tree frequently 200 feet high, with a trunk 6–10 feet in diameter, with short slender usually pendulous branches forming a narrow pyramidal head; bark orange-brown, thin when young, an inch or more thick on mature trees and divided into broad flat ridges; leaves flat, dark green and lustrous on the upper surface, marked below by broad white bands; cones sessile, oblong or oval, ¾–1 inch long with few yellowish-brown oblong scales abruptly contracted

at the middle and purplish toward the base.

Abundant throughout the Selkirks.

Tsuga Mertensiana (Bong.) Carr. *Mountain Hemlock.*

Tree usually 70–100 feet high with a tapering trunk 2–5 feet in diameter and gracefully pendent slender branches and drooping lateral ones; bark grayish and scaly, on mature trees 1–1½ inches thick divided into rounded ridges with closely appressed cinnamon scales; leaves more or less in clusters, standing out all over the sides of the branches, rounded, light bluish-green or in some pale blue ½–1 inch long; cones sessile, cylindric, oblong, narrowed toward the blunt apex and somewhat toward the base, pendulous, 1–3 inches long, with thin scales usually as broad as long, with slightly thickened or erose margins, purplish-brown, 4 times as long as the sharp, purple bract.

On the slopes and exposed ridges through the Selkirks, a most attractive tree.

Tsuga Mertensiana (Bong.) Carr. (⅔ Nat.)
Mountain Hemlock.

Tsuga heterophylla (Raf.) Sarg. (⅙ Nat.)
Hemlock.

Picea Albertiana S. Brown. *Alberta Spruce.*

A tree 30–60 feet high, slender, strict; twigs smooth and shining or occasionally glandular, hairy, but never glaucous, yellowish-brown when young becoming darker with age, leaf-bases long and standing out at right angles from the stem; leaves pale blue or blue-green, ½–1 inch long, nearly straight or curved, acute or with a rigid tip, 4-sided; cones ovate or oblong, bright crimson when young, at maturity 1–1½ inches long and nearly as broad when expanded, scales stiff and rigid, broadly rounded at the apex, entire, broader than long, cinnamon brown with a chestnut edging; bract very small with a sharply angular tip.

The common spruce in the lower valleys and river bottoms throughout the Rockies.

Picea Engelmanni (Parry) Engelm. *Engelmann's Spruce.*

A tree often 150 feet high but usually much lower, with a trunk reaching 4–5 feet in diameter; spreading branches, produced in regular whorls and forming a narrow compact py-

ramidal head, and gracefully hanging short lateral branches; bark when mature reddish-brown and broken into thin scales; leaves soft and flexible, slender or slightly incurved, stouter on the fertile branches, $\frac{1}{2}$–$1\frac{1}{8}$ inches long, glaucous when young, becoming dark blue-green; cones oblong-cylindric, 1–2 inches long, lustrous, light chestnut brown with thin flexible wedge-shaped scales, with erose-dentate margins.

On the higher mountain slopes in the Rockies, but much lower in the valleys of the Selkirks, where it grows to a great size.

Juniperus Siberica Burgs. *Alpine Juniper.*

A depressed rigid shrub, with many slender, decumbent stems, curving upward and forming a circular mass frequently 10 feet in diameter and 18 inches high; bark reddish-brown; leaves numerous $\frac{1}{3}$–$\frac{1}{2}$ an inch long, awl-shaped, rigid, spreading nearly at right-angles to the branches, linear-lanceolate, acute, and tipped with sharp, slender points; channelled and whitened

Picea albertiana S. Brown. (½ Nat.)
Alberta Spruce.

Picea albertiana S. Brown. (½ Nat.)
Alberta Spruce.

above, lustrous-green beneath; berry-like cones, blue and glaucous, subglobose or oblong about $\frac{1}{4}$ of an inch in diameter.

On dry hills and stony slopes throughout the region.

Juniperus prostrata Pers. *Shrubby Red Cedar.* A depressed, creeping shrub seldom more than a foot high, with spreading branches; bark grayish-brown; leaves scale-like, appressed, 4-ranked, acute, with a short spiny point; berry-like cones, light blue and glaucous, a third of an inch in diameter.

On dry stony ground and slopes throughout the Rockies.

Thuja plicata Don. *Giant Cedar.* A tree frequently 200 feet high with a broad, gradually tapering buttressed base sometimes 15 feet in diameter; branches short, horizontal, usually pendulous at the ends, bright yellow-green during the first year, becoming reddish brown and lustrous; bark thin, cinnamon-

red, divided into broad rounded ridges by shallow fissures; leaves ovate, long pointed, ¼ of an inch long or less; cones purplish-brown, much reflexed, clustered at the ends of the branches, ½ inch long with 6 oblong thin leathery scales with thickened spine-bearing tips.

Occasionally met with in the lower valleys on the western slope of the Rockies; becoming an immense forest tree in the moist valleys of the Selkirks where it forms a striking feature of the landscape.

Taxaceæ

Yew Family

Trees or shrubs with narrow flat evergreen or deciduous leaves and a drupe-like fruit.

Taxus brevifolia Nutt. *Western Yew.*

A small straggling tree or shrub seldom over 20 feet high and up to 12 inches in diameter; bark thin, covered with greenish pur-

ple scales; leaves about ½ an inch long, linear-lanceolate, flat, dark yellowish-green above, paler below with stout midribs and rigid points; fruit a fleshy crimson disc ⅓ of an inch long and as broad, surrounding the hard, nearly black, depressed seed.

Occurs locally in the Selkirks, forming much of the underwood on Beaver Creek.

Araceæ

Arum Family

Smooth perennial herbs with tuberous or corn-like rootstocks and mostly basal, large showy leaves; flowers small and numerously crowded on a spadix which is generally surrounded or subtended by a simple showy leaf-like organ called a spathe.

A very numerous family found mostly in the tropics and represented in our region by but a single species.

Lysichiton kamtschatcense (L.) Schott. *Western Skunk Cabbage.*

A stemless marsh plant with large leaves 1–4 feet long, 3–18 inches wide, oblong or oblong-lanceolate, acute, narrowed below into a short petiole. Flowers appearing before the leaves; spathe yellow with a broad acute blade 2–6 inches long, narrowed below to a sheathing petiole 3–10 inches long; spadix 2–4 inches long, densely flowered, on a stout peduncle 8 inches or more long.

In wet and marshy spots through the Selkirks. Very abundant near Bear Creek Station on the railway, flowering in early spring.

Melanthaceæ

Bunch-Flower Family

Lily-like plants with leafy stems, usually with tufts of grass-like leaves at the base and rootstocks or occasionally bulbs.

The flowers small and distinctly 6-parted,

with the same number of stamens and three styles; the flowers grow in close heads at the top of the stems.

Anthers, 1-celled.
  Leaves broad, petioles sheathing. **Veratrum.**
  Leaves grass-like.
    Flowers erect with a gland at the base of each petal. **Zygadenus.**
    Flowers nodding, petals without glands. **Stenanthella.**
Anthers, 2-celled. **Tofieldia.**

Veratrum viride Ait. *American White Hellebore.*

Stem 2–8 feet high, very leafy, softly hairy especially above. Leaves dark green above, paler and hairy beneath, prominently veiny and sheathing at the base, oval or elliptic, acute, 6–12 inches long, 3–6 inches broad, the upper becoming successively narrower. Flowers yellowish-green, numerous in a spreading head often 2 feet long, with drooping branches; perianth segments oblong or oblanceolate, acute, $\frac{1}{4}$–$\frac{1}{2}$ an inch long, twice as long as the stamens.

In swamps and on moist slopes and stream

borders throughout the region, frequently growing in great masses. In the Rockies it seldom grows below 6000 feet elevation, but is found much lower in the moist valley of the Selkirks.

Zygadenus elegans Pursh. *Tall Zygadenus.* Very glaucous throughout, with a cluster of narrow, grass-like leaves 5–10 inches long and ¼ inch broad, from a chaffy bulbous root; stem whitish-green or purplish, 1–2 feet high, with scattered, purple, leaf-like bracts and an open head of flowers 4–12 inches long; flowers greenish-white, open, ½ an inch or more across the six petals and sepals with a large, bright green gland at the base; stamens 6, erect, forming a central column, anthers scarlet on the opening of the bud, changing to yellow; styles 3.

Throughout the Rockies up to 6000 or 7000 feet elevation, in all kinds of situations and soils, a most attractive plant worthy of a place in the flower-garden, blossoming during midsummer.

Zygadenus elegans Pursh. (½ Nat.)
Tall Zygadenus.

Zygadenus gramineus Rydb. (½ Nat.)
Zygadenus.

Zygadenus gramineus Rydb. *Grass-like Zygadenus.*

A slender, yellowish-green plant 8–12 inches high, from an elongated ovoid bulb. Leaves narrow and grass-like, rough on the margins and midribs, all with sheaths around the stem. Flowers light yellow, ¼ of an inch broad in a compact head 2–3 inches long; stamens exserted, anthers yellow.

On open grassy hill-sides in the Rockies from Banff to Castle Mountain, flowering in June.

Stenanthella occidentalis (A. Gray) Rydb. *Stenthium.*

Smooth 12–18 inches high from a bulbous base. Leaves 2–3 from the same root, 8–10 inches long, ½ an inch broad, spreading. Flowers 6–20, greenish purple, ½ an inch long, open, drooping, in a simple slender head; sepals and petals 3 each, with recurved tips; stamens 6, included.

In moist woods throughout the Rockies, growing in moss; the dark green, widely spreading leaves and wand-like stem of drooping bell-like flowers, making a graceful

and attractive plant during early summer.

Tofieldia palustris Huds. *Scottish Asphodel.*

Low with numerous tufted grass-like leaves 1–2 inches long. Flowers 6-parted, minute, greenish-white in a compact oblong head ¼ of an inch long, elongated in fruiting; stamens 6; anthers yellow not exceeding the perianth; head of flowers borne on a slender, smooth stem 3–7 inches high.

Abundant throughout the Rockies in damp sandy or gravelly ground, on the flood-plains and banks of rivers and streams and on the gravelly shores of lakes and ponds; flowering in June.

Tofieldia intermedia Rydb. *False Asphodel.*

Plant with a cluster of grass-like leaves, 3–8 inches long and about ¼ of an inch broad, yellowish-green, from an oblique and chaffy rootstock. Flowers few, less than ¼ of an inch long, pale yellow, 6-parted, on very short pedicels; stamens 6,

a Stenanthella occidentalis (A. Gray) Rydb. Stenanthium.

b Clintonia uniflora Kunth. Clintonia. (⅔ Nat.)

slightly excerted, with purple anthers; the whole in a compact head about ½ an inch long, on a stem 8–10 inches high, with sticky hairs near the top.

Frequent throughout the region at an altitude of 4000 to 5000 feet, in wet open situations with shallow soil; flowering in June.

Tofieldia occidentalis S. Wats. *Western False-Asphodel.*

Similar to the preceding but readily distinguished by its taller stem and more open head of flowers, with longer sepals and pedicels, which are twice as long in each case.

In the Selkirks only, but frequent there in the bogs around Roger's Pass.

Liliaceæ

Lily Family

Plants with bulbs or corms but never rootstocks; leaves either at the base or in whorls or pairs on the stem; the flowers brightly coloured, frequently large, borne

singly or in clusters at the summit of the frequently naked stem, the six parts though usually distinct, sometimes more or less united into a tube; stamens 6; stigma 3-lobed.

Bracts of the inflorescence thin and transluscent. **Allium.**

Bracts of the inflorescence leaf-like or none.
Bulbs scaly. **Lilium.**
Bulbs corm-like. **Erythronium.**

Allium recurvatum Rydb. *Wild Onion, Garlic.*

Plant 12–15 inches high with an oblique base from an oblong-ovoid bulb. Leaves narrow and grass-like, 6–8 inches long, thick and half rounded on the back, the old ones persistent and forming a mat at the surface of the ground. Flowers numerous, on slender pedicels, in a nodding terminal head; sepals and petals ¼ of an inch long, elliptic-ovate and obtuse, rosy pink with a darker mid-vein; stamens and styles exserted, anthers pale yellow.

Frequent throughout the Rockies on dry grassy or stony slopes and slides; flowering in June.

Tofieldia intermedia Rydb. (⅔ Nat.)
False Asphodel.

Vagnera stellata (L.) Morong. (¼ Nat.)
Star-Flowered Solomon's Seal.

Allium sibericum L. *Northern Garlic.*

Stem 1–2 feet high from a narrowly ovoid bulb, with a single, elongated, round, hollow, basal leaf and 1 or 2 similar leaves on the stem. Flowers numerous in a compact round head; the sepals and petals about ½ an inch long, slender, with a tapering tip, bright rose-purple with a darker midvein: stamens much shorter than the perianth segments.

Not infrequent in moist open places throughout the Rockies; flowering in July.

Lilium montanum. A. Nelson *Mountain Lily.*

Stem 12–18 inches high, rather stout, from a depressed globose bulb an inch in diameter. Leaves alternate except the uppermost which are in a whorl of 5–7, dark green above, paler beneath, minutely roughened on the edges, lanceolate, tapering but slightly toward the sessile base. Flowers erect usually one, but sometimes several, on a stem; sepals and petals 2½ inches long, somewhat spreading, elliptic-oblong, tapering

gradually toward both ends, the base contracted into a claw, which is less than ⅓ the length of the blade; blade reddish-orange on the inner face, paler near the base, which is dotted with numerous purplish-black spots; outer face less brilliant, largely suffused with green; stamens and stigma purplish.

Frequent throughout the Rockies on the edges of woods and in the lower river valleys; very abundant in early July in the valley of the Lower Kicking Horse and Columbia rivers from Golden to Donald.

Erythronium grandiflorum Pursh. *Snow Lily.*

A foot or more high from a deep-rooted, slender, membranous-coated corm. Leaves 2 or occasionally 3, opposite or in a whorl, broadly lanceolate, obtuse, 6–8 inches long, 2–3 inches wide, unequal, dull and glaucous green. Flowers 1–6, nodding, bright yellow, sepals and petals lanceolate 2 inches long, tapering to a slender, strongly reflexed tip; stamens exserted, anthers yellow or purplish-brown.

Erythronium grandiflorum Pursh. (½ Nat.)
Snow Lily.

This beautiful lily is frequent on the slides and mountain slopes throughout the region at an elevation of 5000 feet or higher, appearing immediately after the snows have melted, and lasting but a short time. It may be found flowering according to the elevation and condition of the snow, from May throughout the summer. The plant has derived its common name no doubt from its habit of blooming so close to the melting snows. Where the plant occurs it is usually found in great numbers during the brief flowering period.

Convallariaceæ

Lily-of-the-Valley Family

Resembling the lilies, sometimes with naked but usually leafy stems, and simple or branched, frequently creeping rootstocks, flowers usually small and variously disposed on the stem, either scattered in the axils of the leaves or in terminal clusters, or occasion-

ally solitary on a naked stem; either 4- or 6-parted, regular, perfect; stamens 6.

Plant producing but one flower.	**Clintonia.**
Plant producing several flowers.	
Flowers in a raceme or panicle.	**Vagnera.**
Flowers in an umbel or solitary.	
Flowers terminal on the branches.	**Disporum.**
Flowers axillary.	
Perianth narrowly campanulate.	**Streptopus.**
Perianth rotate.	**Kruhsea.**

Clintonia uniflora (Schult.) Kunth. *Clintonia.*

More or less hairy throughout, with 1 to 3 or 4 dark green leaves, 4–8 inches long and 1–2 inches wide, oblong-lanceolate with an abrupt tip, and tapering at the base to sheathing petioles, from a creeping underground stem 2–3 inches long. Flower-stem shorter than the leaves with one or rarely two blossoms which are pure white, very open, 6-parted; sepals and petals ¾–1 inch long, oblanceolate, obtuse; stamens 6, shorter than the petals, anthers yellow.

In rich, moist woods throughout the region.

Lilium montanum A. Nelson. (½ Nat.)
Red Mountain-Lily.

Kruhsea streptopoides (Ledeb.) Kearney. (½ Nat.)
Kruhsea.

Vagnera stellata (L.) Morong. *Star-flowered Solomon's Seal.*

Glaucous throughout, 8–20 inches high, smooth or with a few short hairs, leafy from a stout fleshy root; leaves alternate, 2–5 inches long, lanceolate or oblong-lanceolate, acuminate, with a clasping base, smooth and bright green above, glaucous and minutely hairy beneath. Flowers white, several forming a rather open terminal head. 1–2 inches long; petals and sepals narrow, $\frac{1}{4}$ to $\frac{3}{8}$ of an inch long; stamens 6, about half their length, anthers nearly white.

Common throughout the region in moist words and thickets; flowering through June and July.

Vagnera amplexicaulis (Nutt.) Greene. *False Solomon's Seal.*

Tall, stout, and leafy, 18–30 inches high, from a fleshy rootstock; stem striate and slightly hairy especially near the top; leaves alternate, sessile or short-petioled, ovate or oblong, 3–7 inches long, $1\frac{1}{2}$–3 inches broad,

short, acuminate, often with a twisted tip. Flowers small, yellowish-white in a close terminal head 1½–3½ inches long; petals and sepals minute, about $\frac{1}{16}$ of an inch long; stamens 6, the filaments petaloid and about ⅛ of an inch long, anthers yellowish white.

Common throughout the region in the moist rich woods; flowering during June.

Streptopus amplexifolius (L.) DC. *Tall Twisted-stalk.*

Plant 1–3 feet high, from a short, stout rootstock, covered with numerous fibrous roots; stem glaucous, usually branching below the middle, smooth above and covered with stiff hairs below. Leaves alternate, ovate-lanceolate, 2–5 inches long, 1–2 inches wide, acuminate, smooth, bright green above, glaucous beneath, heart-shaped and clasping at the base. Flowers numerous, 1 or 2 on a stem at the back of each of the upper leaves, stem bent or twisted about the middle; sepals and petals greenish-white or yellowish, narrowly lanceolate about ½ an

inch long, spreading and turned back at the tips; berry $\frac{1}{2}$–$\frac{3}{4}$ of an inch in diameter, globose, yellow or bright scarlet.

A rather striking plant throughout the region in the moist rich woods among rocks; flowering in June.

Streptopus curvipes A. M. Vail. *Smaller Twisted-stalk.*

Plant 6–24 inches high, smooth except the flower-stalks and margins of the leaves, simple or slightly branched from a slender creeping rhizome, with a few fibrous rootlets at the nodes. Leaves yellowish-green, sessile, oval or oblong-lanceolate, 1–3 inches long, acuminate at the tip and rounded or more or less clasping at the base, the margins more or less scatteringly glandular-hairy. Flowers few at the backs of the upper leaves, solitary on glandular-hairy, curved stalks $\frac{1}{4}$–$\frac{3}{4}$ of an inch long; sepals and petals pale purple or rose colour, darker spotted on the inner surface, slender, slightly more than $\frac{1}{4}$ of an inch long; anthers beaked, the beaks slender;

berry globose, about ⅜ of an inch in diameter, bright red.

In the damp woods in the Selkirks, frequent, growing in colonies and spreading largely by the creeping rhizomes.

Kruhsea streptopoides (Ledeb.) Kearney. *Kruhsea.*

Smooth and simple, 3–6 inches high, from an extensively creeping rhizome, with a few fibrous roots at each node. Leaves 4–8, bright green and shining on both surfaces, ovate-lanceolate, acute, 1–2 inches long, the upper merely sessile, the lower clasping at the base. Flowers few, about ¼ of an inch in width, stellate and solitary on very slender, curved stalks about ⅜ of an inch long in the axils, at the backs of the upper leaves; sepals and petals deep wine-colour at the base, with yellowish-green reflexed tips; stamens 6, anthers ovoid, 2-lobed, yellow and prominent, slightly below the centre of the sepals and petals; ovary broadly urn-shaped; style none; berry nearly globose at maturity and bright red.

Known only in the Selkirks where it occurs in colonies of considerable size in the rich woods at Glacier; flowering in the middle of June.

Disporum Oreganum (S. Wats.) B. and H. *Disporum.*

Stem 1–3 feet high, much branched and finely hairy above. Leaves yellowish-green when young, becoming darker with age, ovate or oblong, acuminate, distinctly heart-shaped at the base, 2–4 inches long, hairy, especially beneath. Flowers appearing as the leaves unfold greenish-yellow or nearly white, drooping 1 or 2 together at the ends of the branches; sepals and petals spreading half an inch or more in length, lanceolate and narrowed at the base into a broad claw; stamens exserted, anthers yellow; style simple, larger than the stamens; berry ovate, half an inch in diameter, smooth or nearly so when ripe, bright red and few-seeded.

In moist rich woods throughout the region, most abundant on the western slope of the

Rockies and in the Selkirks; flowering in June.

Disporum majus (Hook). Britton. *Large Flowered Disporum.*

Plant 1–2 feet high with few branches, hairy when young. Leaves ovate or oblong-lanceolate, acute or short, acuminate, rounded at the base. Flowers greenish-yellow or nearly white, 1–3 together at the ends of the branches; sepals and petals not spreading, half an inch or less in length, narrowly oblong or oblanceolate, stamens about equalling the sepals and petals; style slightly longer than the stamens, 3-cleft; berry a little less than half an inch in diameter, depressed, globose, and roughened with short papillæ.

In rich woods, most abundant on the eastern slopes of the Rockies; flowering early in June.

Iridaceæ

Iris Family

Perennial herbs with narrow 2–ranked,

grass-like leaves and mostly clustered, perfect flowers, subtended by bracts; perianth of 6 segments, rolled together in the bud, stamens 3, inserted on the perianth opposite its outer series of lobes; filaments slender, distant or united; anthers facing upward.

Sisyrinchium septentrionale Bicknell. *Blue-eyed Grass.*

Growing in small tufts, 4–10 inches high, pale, glaucous. Leaves stiff and very slender about half the length of the taller scapes, equalling the shorter ones. Spathe small purplish or green, often partly double and enclosing 3 or 4 small bright violet-blue flowers, less than half an inch broad, on erect pedicels.

Throughout the Rockies in open moist ground at the lower elevations; flowering in June.

Orchidaceæ

Orchid Family

Perennial herbs, with corms, bulbs, or

tuberous roots, sheathing entire leaves, sometimes reduced to scales, the flowers perfect, irregular, bracted, solitary, spiked or racemed. Perianth superior of 6 segments, the 3 outer (sepals) similar or nearly so, 2 of the inner ones (petals) lateral, alike; the third inner one (lip) dissimilar, often markedly so, usually larger and often spurred; stamens and style variously arranged. An extensive family with great diversity of flower form, and habit of growth. Most abundant in the tropics, represented in the region as follows:

Perfect anthers 2; lip large, sac-like. **Cypripedium.**
Perfect anther 1.
Plants saprophytic, without green herbage. **Corallorhiza.**
Plants with ordinary green herbage.
Flower and leaf solitary; root bulbous. **Cytherea.**
Flowers several to many in racemes.
Leaf only 1.
Flowers white with purple spots. **Orchis.**
Flowers greenish. **Lysiella.**
Leaves only 2, cauline. **Ophrys.**
Leaves more than 2.
Stem leaves reduced to bracts.
Basal leaves white veined. **Peramium.**
Stem leaves not reduced to bracts.

a Cypripedium passerinum Rich. Small White Lady's-Slipper. (⅔ Nat.)

b Cypripedium parviflorum Salisb. Small Yellow Lady's-Slipper.

Flowers not spirally arranged.
Glands surrounded by a thin membrane. **Cœloglossum.**
Glands naked. **Limnorchis.**
Flowers spirally arranged. **Ibidium.**

Cypripedium passerinum Rich. *Small White Lady's Slipper.* Stem 8–10 inches high from a decumbent base, leafy, hairy throughout. Leaves 4 or 5, lanceolate, acuminate, veiny, 3–4 inches long, yellowish-green, and clasping at the base. Flowers solitary, small; lip obovate, inflated half an inch long, white, spotted with purple inside, particularly near the base; sepals greenish, shorter than the lip, the upper forming a sort of hood; the lateral petals white, oblong-lanceolate, obtuse, half an inch long, spreading.

In damp shaded situations, frequent in the Rockies; flowers in July.

Cypripedium parviflorum Salisb. *Small Yellow Lady's Slipper.* Stem 1–2 feet high, slender, and leafy. Leaves elliptic or lanceolate, 2–6 inches long, 1–2¼ inches wide, yellowish-green, veiny, scatteringly hairy. Flowers

usually solitary, bright yellow; lip inflated, curved, an inch or more long, spotted and blotched inside with purple; sepals and petals longer than the lip, laterals twisted, 1½–2 inches long, lanceolate with an attenuate tip, yellowish green or sometimes purplish.

Not uncommon in the Rockies in moist ground, very abundant on the torrent fan among loose stones at the head of Emerald Lake; flowering in June.

Corallorhiza Corallorhiza (L.) Karst. *Early Coral-root.*

Stem smooth, greenish yellow or purplish; 4–12 inches high from a mass of coral-like roots. Leaves absent but represented by 2–5 closely sheathing scales. Flowers 3–12 in a head 1–3 inches long; sepals and petals slender, ¼ of an inch long, yellowish or dull purplish; lip not quite as long as the petals, white or whitish, oblong, nearly entire or slightly notched at the apex, 2-toothed at the base, occasionally with purple spots.

Corallorhiza Corallorhiza (L.) Karst. (½ Nat.)
Coral-Root.

Lyschiton kamtschatcense (L.) Schott. (¼ Nat.)
Western Skunk-Cabbage.

Frequent in woods in the Rockies especially those of the "Jack Pine," flowering in May and early June.

Corallorhiza multiflora Nutt. *Large Coral-root.*

Stems 8–20 inches high, purplish, with several appressed scales. Flowers 10–30 in a head 2–8 inches long, brownish purple ½–¾ of an inch long; sepals and petals linear-lanceolate, about ⅓ of an inch long; lip white, spotted and lined with purple, oval in outline, deeply 3-lobed, the middle lobe broadest; spur manifest and yellowish.

Not infrequent in the rich woods in the Selkirks; flowering in late summer.

Cytherea bulbosa (L.) House. *Calypso.*

Stem 3–6 inches high, purplish, from a bulb nearly half an inch in diameter. Leaf solitary, dark, lustrous green, 1–1½ inches long, round, ovate, obtusely pointed at the apex, rounded or somewhat heart-shaped at the base, deeply veined. Flower solitary, nod-

ding, an inch long, rosy purple variegated with pink and yellow; petals and sepals, linear, erect or spreading, half an inch or more long with longitudinal purple lines; lip ¾ of an inch long, sac-like and spreading, divided into two below, with a prominent patch of yellow hairs near the point of division.

This charming little orchid, by far the most dainty of any found in the region, is frequent, growing in deep moss on the shaded slopes of the Rockies; very fragrant, flowering in early June.

Orchis rotundifolia Pursh. *Round-leaved Orchid.*

Plant slender, 8–10 inches high with one leaf near the base, varying from nearly orbicular to oval, 1½–3 inches long, 1–2 inches wide, sheathing at the base. Spike 2–8 flowered; flowers half an inch or more long; lateral sepals spreading, somewhat longer than the petals, petals and sepals oval, rose-colour; lip white, purple-spotted, longer than the petals,

a Cytherea bulbosa (L.) House. (¾ Nat.)
Calypso.

b Orchis rotundifolia Pursh. Small Round-Leaved Orchid.

three-lobed, the middle longest, dilated and two-lobed or notched at the tip; spur slender, shorter than the lip.

This beautiful little orchid is abundant throughout the Rockies in cool mossy spots and rich woods; flowering in June.

Lysiella obtusata (Pursh.) Rydb. *Small Northern Bog-orchid.*

Plant 6–8 inches high from a short thick rootstock; stem naked with a single obovate or oblong leaf at the base 1½–2½ inches long, ½–1½ inches wide, obtuse. Flowers few in a slender spike, yellowish-green; upper sepal round, ovate, erect, surrounding the broad column; lateral sepals reflexed and spreading; petals lanceolate, smaller; lip entire, linear-lanceolate, and deflexed; spur slightly curved especially at the tip, shorter than the ovary.

Frequent throughout the Rockies in the lower valleys, in cool shaded spots growing in moss, on the borders of streams, ponds, or lakes; flowering in June.

Ophrys nephrophylla Rydb. *Heart-shaped Tway-blade.*

Stem slender and smooth, 3–8 inches high. Leaves sessile, cordate or broadly ovate, ½–1 inch long; head of flowers rather loose, ½–2 inches long, 4–20-flowered; flowers very minute, purplish or greenish; sepals ovate; petals oblong, about $\frac{1}{16}$ of an inch long; lip two-cleft, twice as long as the petals, the segments linear or hair-like.

This diminutive orchid is one of the commonest species throughout the region in early summer, growing abundantly in mossy places in the moist woods, frequently not rising more than an inch or two above the surface of the ground; the flowers varying greatly in color from yellowish green to purple.

Ophrys convallarioides (Sw.) Wight. *Broad-lipped Tway-blade.*

Stem rather stout, 4–10 inches high, glandular-hairy above the leaves. Leaves smooth, round, oval or ovate, obtuse, 3–9 nerved, 1–2½ inches long, ½–1½ inches

wide. Flowers 3–12 in a loose head, yellowish-green, ½ an inch long; bracts nearly ¼ of an inch long; sepals and petals narrow and strongly reflexed in flower, much shorter than the lip; lip nearly half an inch long, broadly wedge-shaped with two obtuse lobes at the apex and with a tooth at each side of the narrow base; column elongated but shorter than the lip, and incurved with two short projecting wings above the anther.

In hemlock woods throughout the Selkirks; flowering in July.

Ophrys borealis (Morong). *Northern Tway-blade.* Stems 3–5 inches high, smooth below, glandular and with long silky scattered hairs among the flowers. Leaves oval, slightly sheathing, obtuse, an inch or more long, half as broad, generally smooth. Flowers few in a raceme; sepals and petals nearly equal, linear, obtuse, about ¼ of an inch long; lip half an inch long, obtuse at the apex with very obtuse lobes. Yellowish-

green with a purplish middle and purple nerves radiating into the apical lobes, column slightly incurved, $\frac{1}{8}$ of an inch long.

Generally distributed throughout the Rockies but never abundant, seldom more than 3 or 4 plants being found together; flowering in July.

Peramium Menziesi (Lindl.) Morong. *Rattlesnake Plantain.*

Plant 8–15 inches high from a hairy, creeping rootstock. Leaves basal, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long and a third as broad, tapering to both ends, dark green and veiny, sometimes blotched with white. Flowers $\frac{1}{4}$ to nearly $\frac{1}{2}$ an inch long, yellowish- or greenish-white, in a slender spike; sepals and petals lanceolate, erect or nearly so about half the length of the lip, lip swollen at the base and with a long narrow recurved tip.

Frequent in rich woods throughout the region, growing in moss, the evergreen leaves forming a rosette at the base of the stalk of flowers, which blossom in August.

Limnorchis dilatatiformis Rydb. (1/6 Nat.)
Purplish-Green Bog-Orchid.

Peramium Menziesii (Lindl.) Morong (2/3 Nat.)
Menzies' Rattlesnake Plantain.

Peramium repens (L.) Salisb. *Northern Rattlesnake Plantain.*

Plant 6–10 inches high, glandular-hairy in the upper part of the stem. Leaves oblong-lanceolate, an inch or more long and a third as wide, tapering to both ends, green and usually blotched with white along the veins. Flowers small in a one-sided spike, greenish-white, about ¼ of an inch long, densely glandular-hairy on the outer surface; sepals and petals erect, ovate; lip sac-like with a narrow recurved tip.

Frequent in the woods throughout the Rockies, flowering in July.

Cœloglossum bracteatum (Willd.) Parl. *Long-bracted Orchid.*

Stem stout and leafy, 6–18 inches high, from a root of numerous fusiform tubers. Leaves lanceolate or ovate-lanceolate, 2–4 inches long. Flowers in a loose spike 2–3 inches long with bracts an inch long; flowers yellowish-green, sepals ovate-lanceolate, dilated at the base, ¼ of an inch long; petals very narrow or

sometimes thread-like; lip nearly half an inch long, oblong-spatulate, 2–3-toothed or lobed at the tip, more than twice as long as the white sac-like spur.

Frequent in open grassy woods and meadows throughout the Rockies; flowering in June.

Limnorchis dilatatiformis Rydb. *Purplish-Green Bog-orchid.*

Stem 1, 2, or 3 feet tall, from a root of 2 or 3 fusiform, hairy tubers; leafy. Lowest leaves oblanceolate, obtuse, 2–5 inches long, upper ones lanceolate, acute, much longer. Spike of flowers 4–12 inches long, loosely flowered, the bracts linear-lanceolate, the lowest much longer than the flowers, 1–1½ inches long. Flowers about ½ an inch long; sepals yellowish-green and thin, the upper one ovate, erect, about ⅛ of an inch long, the lateral ones obtuse and spreading, ¼ of an inch long, petals lanceolate, acute, greenish-purple or green; lip purple or greenish, linear, obtuse, thick, over ¼ of an inch long;

a Ophrys borealis (Morong). Northern Twayblade.
b Cœloglossum bracteatum (Willo) Parl. Long-Bracted Orchid.
c Limnorchis fragrans Rydb. Fragrant White Bog-Orchid.
d Lysiella obtusata (Pursh) Rydb. Small Northern Bog-Orchid.
e Ophrys nephrophylla Rydb. Heart-Shaped Twayblade.
(⅔ Nat.)

spur about ½ as long as the lip, sack-like.

Frequent through the region in open swamps, wet meadows and sloughs, varying greatly in size; flowering during June and early July.

Limnorchis viridiflora (Cham.) Rydb. *Small Green Bog-orchid.*

Stem 8–18 inches high, strict and leafy. Lower leaves oblanceolate, obtuse, 2–4 inches long, upper lanceolate and acute; spike of flowers short and dense, the bracts linear-lanceolate, the lower slightly exceeding the flowers. Flowers ½ an inch long or less, yellowish-green; upper sepals broadly ovate, erect; lateral ones ¼ of an inch long, acute, spreading; petals erect, lanceolate, acute; lip lanceolate, obtuse, less than ¼ of an inch long; spur club-shaped, curved, about as long as the lip. Differs from the last species in the bright green colour, slightly smaller flowers with broader based lip and the longer, club-shaped curved spur.

In bogs throughout the region; flowering in June.

Limnorchis borealis (Cham.) Rydb. *Small White Bog-orchid.*

Stem 18 inches to 2 feet high, slender and leafy. Leaves, the lower oblanceolate and obtuse, the upper lanceolate, acute. Spike of flowers often rather dense, 4–8 inches long; bracts lanceolate, the lower often much exceeding the flowers; flowers ½ an inch or more long, white or sometimes yellowish or greenish-white; upper sepals ovate, obtuse, ¼ of an inch long, lateral ones oblong-lanceolate, spreading; petals lanceolate, slightly shorter than the sepals; lip rhombic-lanceolate, obtuse, about ¼ of an inch long; spur club-shaped about the length of or shorter than the lip.

Throughout the region in open boggy places and wet meadows; flowering in June.

Limnorchis fragrans Rydb. *Fragrant Orchid.*

Stem slender, 8–12 inches high, from a narrow fusiform tuberous root. Leaves linear, acute, 2–4 inches long, about ½ an inch wide. Spike of flowers slender, lax; bracts, lanceolate, acuminate, the lower

slightly longer than the flowers; flowers pure white with a spicy fragrance; upper sepal ovate-lanceolate, obtuse, the lateral ones linear-lanceolate, acute, and strongly veined; petals narrowly linear-lanceolate equalling the sepals; lip lanceolate with an ovate rhomboid base about ¼ of an inch long; spur slender and curved, slightly exceeding the lip.

In more or less shaded bogs through the Rockies, flowering during July.

Ibidium romanzoffianum (Cham.) House. *Lady's Tresses.*

Stem smooth, 6–18 inches high, leafy below, bracted above; the lower leaves 3–8 inches long, linear or linear-oblanceolate. Head of flowers more or less glandular, hairy, 2–4 inches long, half an inch or more thick, bracts shorter than the flowers; flowers waxy white or greenish, nearly half an inch long with an open mouth, spreading horizontally and very fragrant; upper sepals broad and obtuse; lip oblong, broad at the base, and

contracted below to the crisped apex, thin transparent, and veined, callosities merely thickenings of the basal margins of the lip.

Throughout the region in springy places and wet alpine meadows; flowering toward the end of July.

Salicaceæ

Willow Family

Trees or shrubs with light wood, brittle twigs, and simple alternate leaves; flowers borne in catkins; the staminate and pistillate on separate plants, the seed provided with a covering of long, white, silky, hairs.

Populus balsamifera L. *Balsam Poplar.*

A large tree with nearly smooth gray bark, reaching a maximum height of 80 feet; branches stout, ascending, the larger buds very resinous. Leaves smooth, broadly ovate or ovate-lanceolate, entire, dark green and shining above, pale beneath, acute or acuminate at the apex, rounded or acute at the

base, petioles round. Flowers in slender catkins, the staminate and pistillate on separate trees.

Throughout the region in the river valleys and on the surrounding slopes, usually a tree not over 20–30 feet high but sometimes attaining an immense size.

Populus tremuloides Michx. *American Aspen.*

A slender tree with smooth, light green bark, seldom more than 40–50 feet high, and less than half that in our region. Leaves smooth when young except on the margins, ovate, short-acuminate at the apex, rounded at the base, finely crenulate all around; petioles flattened laterally, very slender, causing the leaves to quiver with the slightest breeze. Flowers in rather stout catkins.

Frequent in the low valleys and slopes through the Rockies, forming groves, or singly.

The willows which are very largely represented throughout the region, in the low

or moist ground and banks of streams, as shrubs or small trees; or on the drier slopes, and in alpine meadows and summits, frequently as very diminutive shrubs with stems less than an inch high, have been omitted entirely, owing to the extreme difficulty of distinguishing between them in a work of this kind.

Betulaceæ

Birch Family

Trees or shrubs with alternate simple leaves; staminate and pistillate flowers borne in separate catkins on the same plant; the staminate usually long, slender, and drooping; the pistillate short and erect; fruit cone-like.

Betula papyrifera Marsh. *Paper Birch, Canoe Birch.*

Becoming a large forest tree; bark chalky white, peeling in thin layers. Leaves ovate, acute, or acuminate, dentate and denticulate, smooth above, glan-

dular and hairy on the veins beneath, slender-petioled 1½–4 inches long. Staminate catkins 2–4 inches long; pistillate catkins ¾ of an inch or more long.

Sparingly on the slopes in the vicinity of Field, British Columbia; not a common tree.

Betula occidentalis Hook. *Western Red Birch.*

A tree sometimes 100 feet high but much smaller in our region; the bark smooth dark bronze; twigs gray-brown, warty. Leaves broadly ovate or nearly orbicular, sharply serrate, short-petioled, smooth on both sides or sparingly hairy beneath ¾–2 inches long.

On river shores throughout the region, sparingly from Field west.

Betula glandulosa Michx. *Glandular Birch, Scrub Birch.*

A shrub 1–8 feet with brown, glandular, warty twigs. Leaves orbicular, oval or ovate, smooth, rounded at the apex, crenate-dentate, bright green above, pale and sticky, glandular-dotted beneath, short petioled, ¼–1 inch long.

Staminate catkins, commonly solitary, about ½ an inch long; cones when ripe ½–1 inch long.

In moist ground and thickets in the lower valleys through the Rockies, frequent.

Alnus tenuifolia Nutt. *Slender-leaved Alder.* A shrub 4–20 feet high with brown bark. Leaves more or less broadly ovate, 2–3 inches long, acute, rounded or slightly heart-shaped at the base, acutely doubly toothed, light green and smooth on both sides or slightly hairy. Staminate catkins slender, drooping, 1–2 inches long; fruiting cones erect, ½ an inch or less long.

In moist places and thickets and stream banks at the higher elevations throughout the region, very abundant in the Selkirks.

Loranthaceæ

Mistletoe Family

Parasitic herbs growing on woody plants and absorbing their food from the host plant through specialised roots; leaves opposite,

frequently reduced to scales; flowers dicœcious or monœcious, regular; in terminal or axillary clusters.

Razoumofskya americana(Nutt.) Kuntze. *Dwarf Mistletoe.*

Greenish-yellow or brownish, smooth, fleshy; stems rather slender, numerous, and tufted, forked or branched into 4-angled jointed branches. Leaves reduced to opposite scales at the joints. Flowers very small, the staminate and pistillate on separate plants; staminate plants 2–4 inches long, with the flowers on terminal peduncle-like joints; pistillate plants much smaller and darker coloured; berries ovate, purplish brown, $\frac{1}{6}$ of an inch long.

Throughout the Rockies, parasitic on Pinus Murrayana; locally abundant, appearing in midsummer.

Santalaceæ

Sandalwood Family

Low herbs parasitic on the roots of other

plants, with entire leaves and perfect, greenish flowers, either terminal or axillary; calyx 3–6-lobed; petals wanting; stamens as many as the calyx lobes and inserted near their bases or opposite them upon the disc; fruit in the only genus represented in the region, drupe-like, crowned by the persistent style.

Comandra pallida DC. *Pale Comandra.*

Stem slender and leafy, 6–12 inches tall, pale and glaucous. Leaves linear or linear-lanceolate, acute or the lowest of those of the stem, oblong-elliptic. Flowers small, less than ¼ of an inch high with short pedicels, clustered at the summit of the stems, calyx purplish or sometimes nearly white; fruit ovoid-oblong, nearly half an inch high and crowned by the very short upper portion of the calyx tube.

On dry hillsides throughout the Rockies; flowering during June.

Comandra livida Rich. *Northern Comandra.*

Stem slender, usually quite simple, 4–12 inches high. Leaves thin, oval, obtuse or rounded at the apex, narrowed at the base,

Comandra pallida DC. (⅔ Nat.)
White Comandra.

Eriogonum subalpinum Greene. (½ Nat.)
Tall Eriogonum.

short-petioled ½–1½ inches long, nearly half as broad, yellowish or purplish-green when young, becoming bright green or often variegated with age. Flowers small, less than ¼ of an inch broad; purplish green, in axillary clusters of 1–5 flowers; drupe globose-oblong, ¼ of an inch in diameter, bright red when ripe.

Throughout the Rockies in moist ground and shaded mossy places and borders of woods, flowering in June. While inconspicuous early in the season, in midsummer it is apt to be quite showy on account of the striking, golden yellow veining of the otherwise green leaves; this condition is due to a fungoid or other disease of the plant.

Polygonaceæ

Buckwheat Family

Herbs and twining vines with alternate or sometimes opposite or whorled leaves, jointed

stems and usually sheathing united stipules; flowers small, regular, perfect, monœcious, diœcious or polygamous; petals none, calyx 2–6-parted, the segments more or less folded over each other, sometimes petal-like; stamens 2–9 dilated at the base and distinct or united into a ring; ovary superior, one-celled with a solitary ovule.

Flowers not involucrate; stipules sheathing.
  Leaves reniform, sepals 4. **Oxyria.**
  Leaves not reniform; sepals 6.
    Sepals unequal; stigmas tufted. **Rumex.**
    Sepals equal; stigmas capitate. **Polygonum.**
Flowers involucrate, many; stipules wanting. **Eriogonum.**

Oxyria digyna (L.) Hill. *Mountain Sorrel.*

Stems 2 inches to a foot high, scape-like and leafless, from a large chaffy rootstock. Leaves basal on long petioles, reniform or orbicular ½–2 inches wide with a wavy margin, sometimes notched at the apex. Racemes 2–3 inches or more long, of many small flowers on slender pedicels; crimson or pinkish and showy in fruit.

Frequent at the higher altitudes through-

out the region in moist grounds and beside streams, flowering in June.

Rumex acetosa *Sour.* Stems a foot or more high, smooth. Leaves oblong, hastate or ovate-sagittate, 1–4 inches long, acute, the basal few and long petioled, stem leaves sessile, the acute auricles entire. Flowers, dicœcious, minute, crowded in a slender head 3–6 inches long, yellowish-green tinged with red.

In moist open ground at the higher elevations, more or less frequent throughout the Rockies, flowering in midsummer.

Rumex salicifiolus Weinm. *Pale-leaved Dock.* Smooth, pale green, erect, and spreading, 1–3 feet high. Leaves lanceolate, acute or acuminate at both ends, petioled. Flowers small greenish-white in erect or reflexed racemes, dense in fruit, interrupted below; wings of the fruit triangular-ovate, with a large ovoid tubercle.

Frequent throughout the Rockies at the lower altitudes; flowering in summer.

Polygonum viviparum L. *Alpine Bistort.*

Smooth, with a corm-like root-stock; stems solitary or clustered, 2–10 inches high. Basal leaves lanceolate or oblong 1–8 inches long, rather acute, cordate at the base on long petioles; stem leaves narrowly lanceolate or linear, upper sessile with revolute margins. Flowers in a dense terminal raceme several inches long; rose-coloured or white; stamens exserted; small bulblets frequently developed among the flowers, which later produce leaves and young plants.

Frequent in moist sandy soil and river banks throughout the Rockies, flowering in June and July.

Several small weedy species of the genus are also found through the region but are not sufficiently striking to be here described.

Eriogonum subalpinum Greene. *Tall White Eriogonum.*

Stems depressed, much branched, prostrate and matted at the base. Leaves oblong to ovate-spatulate, 1–2 inches long, on slender petioles, smooth and

green above, white-woolly beneath. Scape like peduncles, erect, 8–14 inches high, with a simple, large umbel of 8–12 rays subtended by a whorl of leaves. Flowers $\frac{1}{8}$–$\frac{1}{4}$ of an inch high, cream-coloured or nearly pure white, and tinged with rosy pink especially in age.

A striking plant growing in stony places and on rocky slopes, throughout the Rockies, flowering in June and July.

Eriogonum ochroleucum Small. *Yellowish-white Eriogonum.*

Tufted from a large rootstock. Leaves white and woolly throughout, densely crowded on the very short stems, elliptic to obovate-spatulate, half an inch or more long, narrowed at the base into slender, frequently spirally-twisted petioles; scapes slender, several, six inches or more high bearing a globular head of pale yellowish-white flowers $\frac{3}{16}$ of an inch high.

On a moist rocky slope at an elevation of 4500 feet near Glacier, abundant, the

plant may occur elsewhere in the region but has not been observed; flowers in June.

Portulacaceæ

Purslane Family

Fleshy herbaceous plants, with regular perfect, unsymmetrical flowers; sepals commonly 2; petals 4 or 5, folded together, stamens equal in number to the petals or fewer.

Claytonia lanceolata Pursh. *Spring Beauty.*

Stem 3–8 inches high from a round corm. Leaves oblong or lanceolate, ½–1½ inches long. Flowers nearly half an inch broad, few to several in a loose head, on slender pedicels; petals notched at the end or almost obcordate, white with pink veins.

One of the first plants to appear in spring on the edges of the snow-banks, throughout the region, from the lower altitudes up to the alpine summits, flowering throughout

Claytonia lanceolata Pursh. (½ Nat.)
Spring Beauty.

Claytonia parvifolia Moc. (½ Nat.)
Small-Leaved Spring Beauty.

the summer according to elevation and condition of the snow.

Claytonia parvifolia Moc. *Small-leaved Spring Beauty.*

Stems 6–12 inches high, diffuse, ascending or somewhat reclined or creeping, sometimes reduced to slender naked runners. Leaves fleshy, rhombic-ovate, acute, about half an inch long, contracted at the base, the upper a quarter of an inch long or less. Flowers few and racemose; petals somewhat obcordate ¼ of an inch long, much surpassing the rounded sepals, rose-colour varying to white; propagating freely by bulblet-like offshoots in the axils of the stem leaves, as well as by the usual method.

In wet stony places and in the gravelly beds of Alpine brooks, frequent in the Selkirks, flowering in July.

Caryophyllaceæ

Pink Family

Herbaceous plants, often swollen at the

nodes, with opposite entire leaves and perfect or rarely dicœcious regular flowers; sepals 4 or 5 persistent, separated or united into a calyx-tube; petals equal in number to the sepals or none; stamens twice as many as the sepals or fewer.

Sepals united; petals long clawed.
  Calyx 10–many nerved.
    Styles 3; capsule with 3 or 6 teeth. **Silene.**
    Styles 5; capsule with 5 or 10 teeth. **Lychnis.**
Sepals free to the base or nearly so.
  Petals two cleft or rarely none.
    Capsule cylindric, usually curved. **Cerastium.**
    Capsule ovate or oblong, not curved. **Alsine.**
  Petals entire or notched, rarely none.
    Styles as many as the sepals and alternate with them. **Sagina.**
    Styles fewer than the sepals.
      Seeds appendaged. **Mœhringia.**
      Seeds not appendaged. **Arenaria.**

Silene acaulis L. *Moss Campion.* Closely tufted, an inch or two high, forming cushion-like beds, often 2 feet or more across. Leaves sessile, crowded, linear, ½ an inch or less long, the margins ciliate. Flowers ¼ of an inch or more across, nearly

Silene acaulis L. (⅔ Nat.)
Moss Campion.

Lychnis apetala L. (⅔ Nat.)
Nodding Lychnis.

sessile or raised on naked curved peduncles, often ½ an inch long; calyx narrowly campanulate, ¼ of an inch long, smooth, the teeth short, rounded; petals rose-purple or rarely white, entire or notched.

In alpine meadows, in stony ground, on the moraines and tops of the mountains throughout the region, flowering in June and July.

Silene Lyallii S. Wats. *Lyall's Catchfly.* Stems slender, decumbent at the base, 12–18 inches high, minutely hairy throughout, glandular above. Leaves, the basal spatulate, obtuse 1–2 inches long on long petioles, those of the stem linear 1–2 inches long, sessile. Flowers on short peduncles in rather loose terminal heads; calyx oblong, inflated, about ½ an inch long, narrow, glandular, teeth purple-tipped; petals white, nearly half an inch long, spreading, two-lobed.

On grassy alpine slopes throughout the region, flowering in June and July.

Lychnis apetala L. *Nodding Lychnis.*

More or less glandular-hairy, 2–6 inches high. Leaves linear or oblanceolate, ½–2½ inches long. Flower solitary, ½–¾ of an inch long, nodding; calyx inflated, strongly purple veined, its teeth triangular-ovate, acute; petals purple, as long as or shorter than the calyx, narrow, 2-cleft.

Among loose boulders on the moraines and alpine summits throughout the region, flowering in July.

Cerastium arvense strictum (L.) Rydb. *Field Chickweed.*

Stems tufted, ascending from a decumbent base, 3–6 inches high, hairy throughout, roughly so at the base, glandular at the summit. Leaves numerous, ½–¾ of an inch long, narrowly lanceolate, acute, with a broad sessile base. Flowers several in a more or less close head, nearly half an inch broad, white; petals deeply notched.

In dry stony ground in the lower valleys of the Rockies, flowering in June.

Cerastium behringianum Cham. and Schl. *Alpine Chickweed.*

Thick, silky-hairy below, with sticky hairs above; stems matted 1–3 inches high. Leaves small, oblong, ¼ of an inch long or less, rather thick, obtuse. Flowers ¼ of an inch or more broad; petals white, notched at the apex, sometimes little longer than the lanceolate sepals.

In stony ground, alpine slopes and summits throughout the Rockies, flowering during summer.

Alsine longipes (Goldie) Coville. *Long-stalked Stitchwort.*

Erect or ascending, tufted, simple or rarely sparingly branched, 3–12 inches high, smooth and shining. Leaves light green, lanceolate or linear-lanceolate, ½–1½ inches long, broad at the base. Flowers few, ¼–⅓ of an inch broad, terminal on long, slender, erect pedicels; sepals ovate or lanceolate, acute; petals 2-cleft, exceeding the calyx.

In moist open places throughout the Rockies, flowering in June.

Alsine læta (Richards.) Rydb. *Glaucous Stitchwort.*

Low, smooth, or somewhat hairy, 1–4 inches high, very glaucous throughout, densely leafy at the base. Leaves keeled, lanceolate, awl-shaped to linear, rather stiff, ¼–½ an inch long. Flowers ¼ of an inch or more across; sepals lanceolate, acute, ⅛ of an inch long; petals notched, longer than the sepals; stamens showy, with scarlet anthers.

In alpine meadows and moist grounds at high altitudes, throughout the region; flowering in July.

Alsine borealis (Bigel.) Britton. *Northern Stitchwort.*

Erect or ascending, weak, much branched, smooth, or hairy above, 6–18 inches long. Leaves thin, lanceolate or oblong-lanceolate, ½–1½ inches long, acute, sessile, thin, margins slightly hairy or naked. Flowers small and inconspicuous in a leafy terminal compound head,

a Alsine borealis (Bigel.) Britton. Northern Stitchwort.
b Mœhringia laterflora (L.) Fenzl. Blunt-Leaved Sandwort. (½ Nat.)

Arenaria capillaris nardifolia (Ledeb.) Regel. (⅔ Nat.) Rock Sandwort.

ascending or spreading on slender pedicels; sepals ovate-lanceolate, acute; petals shorter than the sepals or none.

In wet places at the lower altitudes throughout the Rockies; flowering throughout the summer from early June.

Sagina saginoides (L.) Britton. *Arctic Pearl-wort.*

Smooth, stems very slender and tufted, 1–4 inches high. Leaves $\frac{1}{8}$ to nearly $\frac{1}{2}$ an inch long with a spiny tip. Flowers small, solitary or few together, at the end of the slender stem, about $\frac{1}{8}$ of an inch broad; petals white minute, hardly exceeding the calyx.

On rocks and moist sandy ground throughout the region; flowering in June.

Mœhringia lateriflora (L.) Fenzl. *Blunt-leaved Sandwort.*

Stems erect or ascending, simple or at length, sparingly branched, finely hairy throughout, 4–12 inches high. Leaves thin, oval, or oblong, $\frac{1}{2}$–1 inch long, obtuse, spreading, the margins and nerves fringed with hairs. Flowers few in

lateral and terminal clusters or sometimes solitary; ¼ of an inch or more broad, their parts in 4's or 5's; sepals oblong, obtuse or acute, half as long as the nearly entire white petals.

In moist places growing among grass, throughout the Rockies; flowering in June.

Arenaria capillaris nardifolia (Ledeb.) Regel. *Rock Sandwort.*

Smooth throughout except the tops of the stems and sepals, which are glandular; stems slender, 4–8 inches high, numerous from a tufted, leafy base. Leaves mostly in bundles ½–1½ inches long, smooth, very slender and curved, with a spiny tip, those of the stem few and much reduced. Flowers white, ½ an inch broad in a loose branching head.

A rather striking plant on grassy slopes throughout the region; flowering in June.

Arenaria verna equicaulis A. Nelson. *Vernal Sandwort.*

Very slender, much branched and finely, sticky-hairy throughout; stems threadlike, numerous, nearly of a uniform length in the same plant, 2–3 inches long. Leaves crowded at the base, few and much reduced above, linear, awl-shaped, thick, semi-cylindric, nearly smooth. Flowers small, little more than ⅛ of an inch across; sepals ovate-oblong, acute, strongly 3-nerved; petals white, acute, not exceeding the sepals.

A small tufted plant with wiry stems and minute white star-like flowers, in moist or dry, sandy places throughout the region from the low valleys to the alpine summits; flowering in May and June.

Arenaria sajanensis. Willd. *Alpine Sandwort.*

Closely tufted, stems densely glandular-hairy, decumbent, very leafy below, ½–2½ inches long with 2 or 3 pairs of short, rather distant leaves and terminating in 1–3 flowers. Lower leaves, linear-obtuse, stiff, ⅛ of an inch or more long,

smooth or slightly hairy; calyx lobes linear-oblong, 1–3 ribbed, glandular, hairy, ⅛ of an inch long; petals white, broad, equalling or exceeding the sepals.

On high alpine slopes and summits, throughout the Rockies; flowering in June and July.

Ranunculaceæ

Crowfoot Family

Herbs or rarely climbing shrubs with acrid sap; leaves usually alternate without stipules; flowers usually showy, blue, white, yellow, or scarlet; sepals 3–15, generally soon falling away, often petal-like; petals about the same number or occasionally wanting; stamens many; carpels many or rarely solitary.

Carpels with solitary ovules; fruit an achene.
  Sepals valvate in the bud; leaves opposite. **Atragene.**
  Sepals folded on each other in the bud; leaves not opposite.

Atragene columbiana Nutt. (⅔ Nat.)
Purple Virgin's-Bower.

Stem leaves three in a whorl.
Styles short, smooth or hairy. **Anemone.**
Styles long, plumose. **Pulsatilla.**
Stem leaves alternate or basal.
Petals none, flowers small; leaves compound. **Thalictrum.**
Petals present.
Flowers white. **Batrachium.**
Flowers yellow.
Achenes papillose or spiny. **Ranunculus.**
Achenes longitudinally nerved. **Halerpestes.**
Carpels with several ovules; fruit, follicles or berries.
Flowers regular.
Leaves simple.
Petals none; leaves cordate-orbicular. **Caltha.**
Petals linear-spatulate; leaves palmately parted. **Trollius.**
Leaves compound.
Sepals spurred; carpels becoming follicles. **Aquilegia.**
Sepals not spurred; carpels becoming berries. **Actæa.**
Flowers irregular; upper sepals spurred. **Delphinium.**

Atragene columbiana Nutt. *Purple Virgin's-bower.* A climbing or trailing vine with somewhat woody stems. Leaves trifoliate, the leaflets thin, on slender petioles, ovate, attenuate, acute, and entire, 2–3 inches long. Flowers purple, 1½–2 inches broad, on

long peduncles, solitary in the axils of the leaves; sepals 4–6, oblong lanceolate, acuminate, more than twice the length of the stamens; styles persistent, forming a plumose head of fruit.

In rocky woods and on shaded mountain sides up to 6000 feet elevation, throughout the Rockies, trailing over the ground, or festooning the shrubs or lower branches of the trees; flowering in early June.

Anemone parviflora Michx. *Northern Anemone.*

Stem simple, sparingly hairy, 4–8 inches high. Basal leaves long-petioled, 3-parted, the broadly wedge-shaped divisions obtusely-lobed or crenate, those of the involucre nearly sessile, similarly lobed. Flower an inch or less in diameter, sepals, oblong, very obtuse, white, blue on the outside near the base; stamens numerous; head of fruit globose.

Common throughout the Rockies in moist ground and rich woods; flowering early in June.

a Anemone Drummondii S. Wats. Alpine Anemone.
b Anemone parviflora Michx. Northern Anemone. (⅔ Nat.)

Anemone Drummondü S. Wats. *Alpine Anemone.* Sparingly pubescent, with long whitish hairs, especially at the involucre, 4–6 inches high. Root-leaves, slender-petioled, 3-parted, the divisions cut into linear, oblong obtuse lobes; leaves of the involucre similar on short petioles, their lobes slightly broader. Flowers usually solitary, half an inch or more broad on long peduncles; sepals 5, ovate or oval, obtuse, white, finely appressed-hairy and blue outside.

Throughout the region in alpine meadows and slopes near the snow, flowering in June and July as the snows disappear.

Anemone globosa Nutt. *Windflower.* Stems 3–15 inches high, close, silky-hairy. Root leaves long petioled, nearly semicircular in outline, 3-parted, the sessile divisions deeply lobed, with cleft, linear segments, involucral leaves similar, short petioled. Sepals 5–8, red, bluish or nearly pure white, half an inch or less long, soft,

hairy outside, receptacle oblong, in fruit densely woolly.

The most abundant anemone through the Rockies in the low open valleys, and, occasionally on the slopes, presenting the greatest variety of colouring from deep rosy pink to pure white and occasionally blue; flowering in early June.

Pulsatilla hirsutissima (Pursh.) Britton. *Pasque Flower.*

Villous, 6–18 inches high. Leaves much divided into narrow, linear, acute lobes, the basal on slender petioles, those of the involucre sessile and erect or ascending. Flowers bluish purple, sometimes nearly white inside; sepals 5–7 ovate-oblong 1–1½ inches long, forming a cup; fruit a head of long silky achenes 2 inches or more in diameter.

This is one of the earliest and most beautiful of all the spring flowers, in the open meadows and mountain sides, blossoming through May and June according to the situation. Probably its most common local

a Pulsatilla hirsutissima (Pursh) Britton.
Pasque Flower.

b Pulsatilla occidentalis (S. Wats.) Freyn. (⅔ Nat.)
Western Anemone.

name, in the Rockies where it is very abundant, is that of crocus, to which flower it does bear a superficial resemblance, in size shape, and colour, and in the habit of the flower appearing as soon as the snow has left the ground, and before the leaves.

Pulsatilla occidentalis (S. Wats.) Freyn. *Western Anemone.*

Stem rather stout, silky-hairy, 6–18 inches high, simple. Leaves biternate, the lower on long petioles, the divisions deeply pinnatifid into deeply cut linear, acute lobes; those of the involucre similar but short-petioled. Flowers $1\frac{1}{2}$–2 inches broad, peduncled, the peduncles much elongated in fruit; sepals spreading, 6–7, oval-obtuse, white, the outside usually blue at the base; fruit of long plumose tailed achenes in a globular fluffy head.

Frequent throughout the Rockies at an elevation of 6000 to 10,000 feet, blossoming on the edges of the snow banks as they recede,

a conspicuous feature of many an alpine meadow during early June.

Thalictrum megacarpum Torr. *Veiny Meadow Rue.*

Smooth, pale green, and glaucous; stem purplish, erect, 6–18 inches tall. Leaves 3–4 ternate, long-petioled, leaflets firm, obovate, rounded at the apex, wedge-shaped or subcordate at the base, ¼–½ an inch long, 3–5-lobed, the lower surface prominently veined. Flowers diœcious, with 4 or 5 small, purplish-green sepals and large, linear, wedge-shaped anthers or slender styles; the achenes wedge-shaped and tapering into a short beak.

A frequent plant in the dry open valleys in the Rockies at the lower altitudes; flowering in June.

Thalictrum occidentale A. Gray. *Western Meadow Rue.*

Stems slender, 1–3 feet high. Leaves 2–4 ternate, the lowest petioled; leaflets thin, ¼ to nearly an inch long, 3–9 lobed at the summit, sparingly glandular-hairy beneath. Flowers diœ-

Thalictrum megacarpum Torr. (⅓ Nat.)

Thalictrum occidentale A. Gray. (⅓ Nat.)
Western Meadow-Rue.

Rananculus Purshii Richards. *Pursh's Buttercup.*

Aquatic or creeping, hairy, at least on the younger parts. Leaves slender-petioled, ¼–1 inch, wide, palmately-divided nearly to the base, into obtuse lobes. Flowers less than ½ an inch broad, bright yellow; petals 5; head of fruit globose, a little less than ¼ of an inch broad.

Frequent in shallow pools throughout the Rockies; flowering throughout the summer.

Ranunculus reptans L. *Creeping Spearwort.*

Stems creeping, rooting at the joints; flowering stems and peduncles ascending. Leaves linear-lanceolate or spatulate ½–2 inches long, entire, gradually narrowed into the petiole. Flowers nearly half an inch broad, solitary, on peduncles ¾–2 inches long; petals 4–7, much exceeding the calyx; stamens numerous; achenes flat.

On muddy shores of ponds and streams throughout the Rockies, flowering in midsummer, the creeping stems frequently interlaced and forming dense mats.

a Ranunculus eremogenes Greene.
Ditch Crowfoot.
b Ranunculus Pursh*ii* Richards. (⅓ Nat.)
Pursh's Buttercup.

Ranunculus inamœnus Greene. (⅓ Nat.)

Ranunculus pedatifidus J. E. Smith. *Northern Buttercup.*

Erect 4–12 inches high, branching. Basal leaves petioled, broadly ovate or nearly orbicular, about ¾ of an inch broad, crenate or often lobed, those of the stem deeply and narrowly lobed, nearly sessile. Flowers about ⅓ of an inch in diameter, petals little surpassing the spreading sepals.

In moist shaded situations near Banff; flowering in June.

Ranunculus eremogenes Greene. *Ditch Crowfoot.*

Stem branching, more or less hairy, 6–18 inches high, sparingly leafy. Leaves rounded in outline, mostly 5-parted, the segments cut into about 3-toothed lobes. Flowers ¼ of an inch or more broad, the light yellow petals surpassing the sepals; fruit in an obtusely ovoid head.

In wet springy places, ditches and the margins of pools, frequent through the Rockies at the lower altitudes; flowering in June and July.

Ranunculus Eschscholtzii Schl. *Snow Buttercup.*

Smooth, 3–12 inches high, 1–3-flowered. Leaves round in outline, those at the root all 3–5-parted and deeply cut, their obovate or wedge-shaped divisions mostly lobed or narrowly cut, stem-leaves similar with oblong to spatulate or lanceolate, often entire divisions. Flowers bright yellow; petals 5, a third of an inch or more long.

Frequent at the higher altitudes, blooming close to the melting snow, throughout the region; flowering in June and July.

Ranunculus alpeophilus A. Nelson.

Similar in habit to the previous species though usually larger, bright green and nearly smooth throughout. Leaves sparingly hairy on the margins, the basal broader and less divided. Flowers pale yellow, $\frac{1}{4}$ of an inch or more broad; petals little longer than the calyx.

Along streams and in moist grounds, an alpine species frequent throughout the Rockies; flowering in June and July.

a Ranunculus saxicola Rydb.
b Ranunculus alpeophilus A. Nelson. (½ Nat.)

Ranunculus Eschscholtzii Schl. (⅔ Nat.)
Snow Buttercup.

Ranunculus saxicola. Rydb. Stems about 4 inches long, decumbent or ascending, smooth. Basal leaves on petioles 2 inches long, rounded, somewhat hairy when young, 3-lobed, lobes spreading and toothed, stem-leaves 1–3, nearly sessile, cleft into 3–7 linear lobes. Flowers about $\frac{1}{2}$ an inch broad, sepals tinged with brown, half the length of the petals, broad, obovate, obtuse, slightly hairy; petals broadly obovate, bright yellow; achenes more or less hairy, with a straight style.

Throughout the Rockies in stony ground at the higher altitudes; flowering in July.

Ranunculus inamœnus. Greene. Stems rather stout, 6–12 inches high, slightly hairy. Root leaves on short petioles, rounded, crenate-toothed or 3-lobed, stem leaves sessile and cut into 3–6 oblong-lanceolate segments. Flowers $\frac{1}{4}$ of an inch or more broad, usually several together on short slender peduncles; petals obovate-oblong, light yellow; achenes small, hairy.

In open ground sparingly throughout the

Rockies at the lower elevations; flowering in June.

Ranunculus Suksdorfii A. Gray.

Stem 3–6 inches high, smooth, slender, 1–3-flowered. Leaves ½ an inch or more long, subreniform or broadly fan-shaped with wedge-shaped base, deeply 3–5-cleft or parted, the radical into cuneate 3–5-cleft or incised divisions, those of the stem linear. Flowers bright yellow; petals round-obovate, ⅓–½ an inch long.

In moist ground on slopes, throughout the Rockies; flowering in June.

Ranunculus eximius Greene. *Low Buttercup.*

Stems hairy, 6–10 inches high, branching. Leaves few, basal, rounded in outline, ternately lobed, sometimes deeply so, on slender petioles; stem leaves sessile or nearly so, cut into narrowly linear or linear-lanceolate lobes. Flowers ¾ of an inch or more broad, petals spreading, bright yellow and shining on the upper surface; sepals not reflexed.

A showy low buttercup in the dry open valleys in the Rockies; flowering in June.

Aquilegia brevistyla Hook. (¾ Nat.)
Small Blue Columbine.

Ranunculus montanensis Rydb. *Meadow Buttercup.*

Stem stout, 1–2 feet high, branching with long rough hairs. Basal leaves long, hairy all over, 3-parted, the divisions again divided or cut into linear or lanceolate segments; petioles 3 or 4 inches long; stem-leaves similar but short petioled. Flowers few, large; sepals broadly ovate with silky hairs; petals broadly ovate, nearly half an inch long, bright yellow; head of achenes, globose; style long, slender, and much curved.

Frequent in the Rockies at the lower altitudes in more or less shaded grassy situations; flowering in June and July.

Halerpestes Cymbalaria (Pursh.) Green. *Creeping Crowfoot.*

Stems creeping and rooting at the joints, 1–7-flowered. Leaves broadly ovate, coarsely crenate, clustered at the base and joints of the long slender runners. Flowers ¼ of an inch across; petals light yellow, longer than the sepals; fruit in oblong heads.

A common species throughout the Rockies

in damp ground, frequently forming mats several feet across; flowering continuously throughout the summer.

Caltha leptosepala Hook. *White Marsh Marigold.*

Stems erect, 2–12 inches high, 1–2-flowered. Leaves roundish or oblong-cordate, longer than broad, irregularly crenate-toothed; sepals 6–8, lanceolate, ¾ of an inch long, white, strongly suffused with blue on the outside; stamens numerous; pistils 5–15.

In springy ground and wet alpine meadows throughout the region, often growing in such abundance as to make the meadows brilliant with the blue and white flowers, which appear soon after the snow has left the ground in June and July.

Trollius albiflorus (A. Gray.) Rydb. *Western Globe-flower*

Stem erect, 6–12 inches high, more or less branching. Leaves palmately divided, the segments many cleft. Flowers solitary, 1–1½ inches broad, subtended by a whorl of leaves; sepals

a Caltha leptosepala Hook.
b Trollius albiflorus (A. Gray) Rydb. Western Globe-Flower.
(⅔ Nat.)

broadly obovate 5–6, pure white tinged on the back with greenish rose; petals 15–20, less than ¼ of an inch long, narrowly truncate, bright yellow, nearly concealed by the numerous stamens.

One of the most abundant and conspicuous of the spring flowers of the alpine meadows, and marshy borders of alpine streams and lakes, commencing to flower when but a few inches high on the edges of the melting snow in May and June.

Aquilegia brevistyla Hook. *Small Blue Columbine.*

One to two feet high, slender, sparingly branched. Leaves, the basal long-petioled, biternate, lobed and crenate, the stem leaves few, nearly sessile and lobed. Flowers ½ an inch or more long, nodding, sepals blue, petals creamy-white with a short blue spur not more than ¼ of an inch long; styles and stamens hardly exceeding the petals.

In open rocky situations, rather local, common in the region around Banff, flowering in May and June.

Aquilegia flavescens S. Wats. *Yellow Columbine.*

Stems smooth, 1–3 feet high, branched. Leaves ternate, leaflets round-cordate, 3-parted, the segments coarsely toothed, 2–3-cleft. Flowers yellow, an inch or more long, nodding; sepals reflexed, oblong-ovate, acute, longer than the spurs; petals spreading with a spur half an inch long; styles and stamens nearly equal, much exserted.

The commonest columbine throughout the region, growing in woods and on slopes up to 8000 feet, varying greatly in colour; flowering in June and July according to the elevation.

Aquilegia formosa Fisch. *Western Columbine.*

Stem 2–4 feet high, branching, sparingly pubescent with spreading hairs. Leaves, the lower triternately parted on long petioles, the upper sessile and ternate or reduced to simple bracts, leaflets broadly wedge-shaped, 3-cleft. Flowers scarlet, drooping, more than an inch long;

a Aquilegia flavescens S. Wats. Yellow Columbine.
b Aquilegia formosa Fisch. Western Columbine. (⅔ Nat.)

sepals scarlet varying to orange, spreading or reflexed, an inch long, lanceolate, acute; petals yellow, more or less spreading, with a scarlet spur about the length of the sepals; styles and stamens exserted.

Throughout the Selkirks, in moist ground, on slopes and borders of rocky alpine streams, flowering during July and late June.

Delphinium Brownii Rydb. *Western Larkspur.*

Stem tall, 2–5 feet high, leafy. Leaves mostly orbicular in outline, 5–7-parted, the upper into narrow-cleft, laciniate divisions, petioled. Flowers nodding, less than an inch long, dull purple, bluish or occasionally white, numerous in an elongated spike; sepals 5, blue, ⅓ of an inch long, not spreading, the upper one prolonged into a spur, half an inch long; petals white, nearly as long as the sepals.

Frequent in the region around Banff in open woods at the lower altitudes, flowering in July.

Delphinium Menziesii DC. *Blue Larkspur.* Sparingly leafy, 10–18 inches tall, from a tuberous rootstock. Leaves, the lowest round-reniform, cut into irregular, oblong, obtuse lobes, the upper with linear, acute lobes. Flowers few in a simple panicle, sepals lanceolate, obtuse, $\frac{3}{4}$ of an inch or more long, spreading, brilliant blue, about as long as the short curved spur; petals exserted, white with purple veins.

Throughout the region in open ground and on grassy slopes; flowering in early June or later according to the altitude.

Actæa arguta Nutt. *Western Red Baneberry.* Stems erect, 2–3 feet high, smooth except the inflorescence. Leaves large, ternately compound, the basal leaf long petioled, the divisions long petioled and pinnate, leaflets ovate, $1\frac{1}{2}$–5 inches long, cut with sharp teeth. Raceme ovoid, 1–2 inches long; flowers small, white, with petal-like sepals; petals, 4–10 spatulate and minute; stamens numerous; berries in a

Delphinium Brownii Rydb. (½ Nat.)
Mountain Larkspur.

Anemone globosa Nutt. (⅓ Nat.)
Wind-Flower.

spreading raceme, small, spherical, and purplish red.

Frequent in the rich woods throughout the region, at the lower altitudes; flowering in late May and early June.

Actæa eburnea Rydb. *Western White Baneberry.* Similar to the preceding species and often growing with it and difficult to distinguish from it when in flower: in fruit, however, they are quite distinct. In A. eburnea the berries are fully twice as large, nearly half an inch long and a quarter of an inch in diameter and pure waxy white.

In rich moist woods throughout the Rockies; flowering with the other species in May and early June; fruiting in late July.

Berberidaceæ

Barberry Family

Shrubs or herbs with alternate or basal leaves, with or without stipules, and solitary or racemed, mostly terminal flowers; sepals

and petals generally overlapping in several series; stamens as many as the petals and opposite them; flowers perfect.

Berberis aquifolium Pursh. *Trailing Mahonia.*

A smooth, trailing shrub. Leaves petioled, pinnate, leaflets 3–7, ovate or oval, oblique, obtuse, truncate or slightly cordate at the base, sessile thick, persistent, finely veiny, 1–2 inches long, with spine-bearing teeth. Flowers yellow, in several erect, dense, terminal racemes; berry globose, blue or purple.

A straggling shrub with spiny glossy dark green leaves, which change to beautiful tints of scarlets and yellows during midsummer and autumn. Frequent in the Rockies in woods; flowering in June.

Papaveraceæ

Poppy Family

Herbs with milky or coloured sap and alternate leaves or the upper rarely opposite, flowers perfect, regular or irregular; sepals 2,

a Delphinium Menziesii DC. Blue Larkspur.
b Lithophragma parviflora (Hook.) Nutt. Lithophragma.
(¾ Nat.)

rarely 3 or 4, soon falling off; petals 4–6 or rarely more, folded together, often wrinkled; stamens numerous.

Capnodes aureum (Willd.) Kuntze. *Golden Corydalis.*

Smooth, 4–12 inches long, diffusely branching. Leaves all but the uppermost petioled, finely cut into oblong-obovate or wedge-shaped segments. Flowers numerous in an oblong head, bright golden yellow, nearly half an inch long; spur ½ the length of the body of the corolla, outer petals keeled, not crested; pods spreading or pendulose, torulose; seeds obtuse, margined, shining, obscurely ridged.

Frequent throughout the Rockies in open ground at the lower altitudes where it has been recently burned or cleared; flowering during most of the summer.

Brassicaceæ

Mustard Family

Herbs, rarely somewhat woody, with watery acrid juice, alternate leaves and racemose

or corymbose white, yellow, or pink flowers; sepals and petals 4; stamens 6, rarely fewer; pistil 1, consisting of 2 united carpels.

Pods short; silicles.
  Pod compressed parallel to the partition. **Draba.**
  Pod compressed contrary to the partition, ovate; flowers white. **Thlaspi.**
  Pod inflated, obcordate; flowers yellow. **Physaria.**
Pods elongated; siliques.
  Pod compressed parallel to the partition.
    Valves nerveless; flowers white. **Cardamine.**
    Valves 1-nerved; flowers white or pink. **Arabis.**
  Pods terete, not at all compressed.
    Pods 1½ inches long or more.
      Flowers yellow, stigma 2-lobed. **Erysimum.**
    Pods less than 1½ inches long.
      Leaves grey with fine hairs; flowers white. **Smelowskia.**
      Leaves not grey-hairy; flowers yellow or white.
        Pubescence of simple hairs. **Sisymbrium.**
        Pubescence of forked hairs.
          Leaves pinnate or pinnatifid; flowers yellow. **Sophia.**
          Leaves entire or nearly so; flowers white. **Braya.**
        Smooth throughout.
          Leaves pinnate or pinnatifid; flowers white. **Roripa.**

Draba glacialis Adams — Caudex much branched, branches short and slender. Leaves strongly keeled, $\frac{1}{4}$–$\frac{3}{4}$ of an inch long, more or less loosely stellate-pubescent,

Draba oligosperma Hook. (Nat.)
Whitlow-Grass.

Draba andina (Nutt.) A. Nelson. ($\frac{2}{3}$ Nat.)
Mountain Whitlow-Grass.

sometimes ciliate at the base. Scapes slender, ¼–6 inches high, hairy or nearly smooth; racemes few-flowered; sepals with a few long hairs or smooth; petals ⅛ of an inch long, pale yellow, darker at the base; pod ¼ of an inch or more long, narrowly oblong, acute at both ends, on pedicels ¼ of an inch or more long; style distinct.

In dry, exposed stony places throughout the Rockies, flowering in early spring.

Draba oligosperma Hook. Stems much branched from the root, densely tufted at the base. Leaves erect, linear, obtuse, tapering to the base, stiff, ciliate, with stellate hairs on both sides, especially toward the apex. Scapes naked; flowers racemose; calyx smooth or with scattered hairs, petals white or pale yellow, obovate, ⅛ of an inch or more long, pods short, nearly orbicular, acute at the apex, more or less rounded at the base, sparingly short-hairy, ⅛ of an inch long; style ⅓ its length.

Alpine summits and dry ridges throughout

the Rockies; flowering in May and June.

Draba andina (Nutt.) A. Nelson.

Densely cæspitose. Leaves linear-oblong, obtuse, $\frac{1}{8}$ of an inch long or less, stiff and rigid, densely imbricated, forming numerous small rosettes: stellate-pubescent on both sides. Scapes slender, 1–2 inches high, few-flowered, petals pale yellow or white, $\frac{1}{8}$ of an inch long; twice as long as the hairy calyx; pods $\frac{1}{8}$ of an inch or less long with short stiff hairs.

On exposed rocks and alpine summits throughout the Rockies, frequent in the vicinity of Banff, flowering in May and June.

Draba nivalis Liljb. *Arctic Whitlow-grass.*

Caudex with numerous slender matted branches. Leaves in dense tufts, oblanceolate, acutish with a rather stout mid-nerve, entire, white-hairy, with dense stellate pubescence, not at all ciliate or slightly so near the base, $\frac{1}{4}$ of an inch long or less. Scapes slender, hairy, 1–3 inches

Draba glacialis Adams. (⅔ Nat.)
Whitlow-Grass.

Draba aurea Vahl. (½ Nat.)
Golden Whitlow-Grass.

high, calyx hairy; flowers $\frac{1}{8}$ of an inch high, the white petals slightly exceeding the calyx; pods few, usually smooth, oblong, acute at each end, $\frac{1}{4}$ of an inch or less long on short pedicels and with a short stout style and 2-lobed stigma.

On alpine summits and exposed ledges throughout the Rockies; flowering in June.

Draba lonchocarpa Rydb.

Similar to the preceding species but with the leaves obtuse; pods $\frac{1}{3}$–$\frac{2}{3}$ of an inch long, smooth, very narrow and usually more or less twisted, on slender pedicels $\frac{1}{4}$–$\frac{1}{2}$ an inch long.

In moist or shaded ground, on alpine summits or on ledges, throughout the Rockies; flowering in June.

Draba aurea Vahl *Golden Whitlow-grass.*

Pubescent throughout with short stellate hairs; stems rather stout, erect, frequently several from the same root; leafy, 2–15 inches high. Leaves entire or few-toothed, oblanceolate or lanceolate, stem

leaves usually narrowed and frequently ciliate at the base, ½–2 inches long. Flowers bright yellow in an elongated leafy raceme; calyx smooth or somewhat hairy; petals elliptic, less than ⅛ of an inch long; pods lanceolate to linear, acute, hairy, often twisted, ¼–½ an inch long on peduncles half their length.

Frequent in dry open ground at the lower altitudes throughout the Rockies; flowering in June.

Draba incana L. *Hoary Whitlowgrass.*

Erect, simple, or somewhat branched, leafy, stellate-pubescent throughout, 6–12 inches high. Leaves lanceolate, oblanceolate or ovate, ¼–1 inch long, acute or obtuse, dentate or nearly entire; flowers white, ⅛ of an inch or less broad; petals notched, twice as long as the sepals; pod oblong or lanceolate, acute ⅓–½ an inch long on nearly erect pedicels about ½ their length.

Throughout the region in moist ravines; flowering during June.

Physaria didymocarpa (Hook.) A. Gray. (⅔ Nat.)
Bladder-Pod.

Smelowskia calycina (Desv.) C. A. Meyer. (⅔ Nat.)
Smelowskia.

Other species of Draba occur in the region but being neither common nor striking it is deemed out of place to describe them here.

Thlaspi arvense L. *Penny-cress.* Decumbent or erect, 6–12 inches high, simple or much branched above. Leaves spatulate or oblong, obtuse, obtusely- or runcinately-toothed or angled. Flowers small, white, in a compact head; pods large, ½ an inch broad, orbicular or nearly so, strongly winged and compressed.

In moist low ground and waste places throughout the Rockies, flowering in June.

Physaria didymocarpa (Hook.) A. Gray. *Double Bladder-pod.* Densely stellate, canescent, pale green, root long and deep. Stems decumbent or ascending, slender, simple, 3–12 inches long. Leaves spatulate, the basal ones obtuse, entire or few lobed, narrowed into margined petioles; stem leaves nearly sessile, acute, much

smaller. Flowers about ½ an inch broad, light yellow in a close raceme, 2–5 inches long in fruit; pods much inflated and variable, often ½ an inch thick.

In dry clayey and stony soil and on slopes throughout the Rockies; flowering in June.

Cardamine pennsylvanica Muhl. *Pennsylvania Bittercress.*

Smooth or rarely with a few scattered hairs; stems erect, stout or slender, 8 inches to 3 feet high, usually much branched, somewhat succulent, leafy up to the racemes. Basal leaves 2–6 inches long, the terminal leaflet obovate, ovate or obcordate, usually narrowed at the base, ¼–¾ of an inch wide, the lateral 4–8 pairs oblong, oval or obovate, all toothed or some of them entire. Flowers about ⅛ of an inch broad, white; pods very narrowly linear, ½–1¼ inches long, erect when mature on ascending pedicels.

In wet shaded places, sparingly throughout the region; flowering during June and July.

Arabis hirsuta (L.) Scop. *Hairy Rock-cress.* Stem erect, nearly simple, 1–2 feet high, roughly hairy or nearly smooth. Basal leaves on margined petioles forming a rosette, obovate or spatulate, obtuse, denticulate, 1–2 inches long; stem leaves sessile, clasping by an auriculate base, lanceolate or oblong. Flowers ¼ of an inch or less long, white, in a strict, elongated raceme; pods narrowly linear, erect or appressed, 1–2 inches long.

In open grounds throughout the Rockies at the lower altitudes; flowering in June.

Arabis Holboldii Hornem. *Stony Rock-cress.* Finely stellately pubescent throughout; stems frequently several, simple or branched, erect ½–2½ feet high. Root leaves narrowly oblanceolate, entire, an inch or less long; stem leaves linear-lanceolate to narrowly oblong, acute, sagittate. Flowers rosy pink or rarely white, becoming more or less reflexed, ¼ of an inch long; pods more or less abruptly reflexed, straight or somewhat curved 1½–2½ inches long, very narrowly linear.

On banks and stony slopes throughout the Rockies; flowering in June.

Arabis Drummondii A. Gray. *Drummond's Rock-cress.*

Slightly glaucous, stems erect; 1–2 feet high. Root leaves narrowly oblanceolate more or less hairy; the stem leaves oblong or linear-lanceolate, 1–2 inches long. Flowers white or pinkish, ¼ of an inch long in a close panicle, elongated in fruit; pods erect when mature, slender, 1½–3 inches long, obtuse.

In open ground and on slopes throughout the Rockies, flowering in June.

Arabis Lyallii S. Wats. *Lyall's Rock-cress.*

Low, smooth, throughout, or sometimes more or less stellate-pubescent below; stem simple, several, or many from the same root. Lower leaves spatulate or linear-oblanceolate, usually ½–1 inch long, sometimes longer; stem leaves narrowly lanceolate or oblong, sometimes scarcely auricled. Flowers rose-colour, ¼ of an inch

long; pods erect or ascending, very slender, straight or nearly so, 1–2 inches long.

Alpine meadows and slopes at the higher elevations throughout the Rockies, flowering in June and July.

Erysimum inconspicuum (S. Wats.) MacM. *Treacle Mustard.*

Erect, 10–18 inches high, cinereous and rough with 2-parted hairs. Leaves narrowly linear-lanceolate or oblong-linear, mostly entire, the root leaves crowded and sometimes repand dentate. Flowers sulphur yellow in a compact head, elongated in fruit, calyx campanulate, ¼ inch high, petals ⅓ longer, the blades spreading; pods slender, erect or nearly so at maturity, 1–2 inches long.

In gravelly places, common on the eastern slopes of the Rockies at the lower elevations, flowering in June.

Smelowskia calycina (Desv.) C. A. Meyer. *Smelowskia.*

Very variable in foliage, finely stellate-pubescent and usually cinereous-villous with larger single hairs; caudex stout, branched.

Leaves soft in texture, usually deeply pinnatifid with 2–several pairs of linear to obovate, obtuse segments. Stems several, 1–6 inches high, racemes at first dense and corymbose, becoming elongated in fruit. Flowers white with exserted broad rounded petals $\frac{1}{8}$ of an inch or more long; pods usually lanceolate, tapering to each end.

On alpine summits through the Rockies; not common; flowering in June and July.

Sisymbrium altissimum L. *Tall Hedge Mustard.*

Erect, 2–4 feet high, freely branching, smooth or nearly so. Lower leaves runcinate-pinnatifid, petioled, the lobes lanceolate, often auriculate; upper leaves smaller, short petioled, or usually sessile, very deeply pinnatifid, the lobes linear or lanceolate, dentate or entire, the uppermost often reduced to linear, entire bracts. Flowers pale yellow, $\frac{1}{4}$ of an inch broad on slender spreading pedicels, pods very narrowly linear, divergent, 2–4 inches long.

At the lower elevations throughout the

region as a weed, especially on the line of the railway, flowering in July.

Sophia intermedia Rydb. *Western Tansy-Mustard.*

Stems 1–2 feet high, sparingly greyish-puberulent, especially below, or sometimes nearly smooth, often glandular above; hairs more or less stellate. Leaves twice or thrice-pinnatifid, the primary divisions oblanceolate or obovate, divided to near the midrib into linear or linear-oblong segments, sparingly puberulent. Raceme rather long, flowers small, less than $\frac{1}{8}$ of an inch high; petals yellow; peduncles diverging sometimes nearly at right angles; pod club-shaped.

Common throughout the Rockies in open places at the lower altitudes, flowering in June and July.

Braya humilis (Meyer) Robinson. *Northern Rock-cress.*

Erect 4–10 inches high, branching below, sparingly hairy. Leaves spatulate or oblanceolate, the lower obtuse, 1–2 inches long, narrowed into a petiole,

sharply dentate or rarely entire, the upper smaller, narrower, often acute. Flowers white or pink $\frac{1}{8}$ of an inch or more broad, pedicels erect, $\frac{1}{4}$ of an inch long in fruit; pods nearly terete, narrowly linear, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, valves finely nerved.

In moist gravelly or stony ground throughout the Rockies at the lower altitudes, flowering in June.

Roripa Nasturtium (L.) Rusby. *Water-cress.* Aquatic, smooth, branched, floating or creeping, rooting from the joints. Leaves odd pinnate of 3–9 segments, the terminal one larger than the lateral, all obtuse, ovate or oval or the terminal one nearly orbicular Racemes elongated in fruit; flowers white, $\frac{1}{8}$ of an inch or more broad; pod $\frac{1}{2}$–$1\frac{1}{4}$ inches long, spreading and slightly curved upwards, on pedicels of about their length.

In ditches and shallow pools through the Rockies, especially abundant at Banff in the warm water at the outlet

from the Basin; flowering through June and July.

Crassulaceæ

Stone-Crop Family

Fleshy smooth herbs with alternate leaves, and perfect flowers in terminal, oftentimes 1-sided cymes. Calyx 4–5-lobed; petals 4–5, distinct, stamens twice as many as the petals; carpels 4–5, styles short.

Sedum stenopetalum Pursh. *Narrow Petaled Stone-crop.* Perennial, tufted, smooth, flowering branches 3–7 inches long. Leaves alternate, crowded, sessile, linear $\frac{1}{4}$–$\frac{1}{2}$ an inch long, entire. Flowers bright yellow, nearly half an inch broad in a 5–7-forked, compact cyme, petals narrowly lanceolate, very acute.

Common throughout the Rockies in moist, gravelly or sandy soil, on river shores, and on rocky slopes, flowering in June and July.

Parnassiaceæ

Grass-of-Parnassus Family

Smooth bog-herbs with a rosette of basal leaves and generally one or a few alternate stem leaves and solitary, terminal flowers. Flowers perfect; calyx generally 5-lobed to near the base; petals 5; perfect stamens 5; staminodia (imperfect stamens) in clusters at the base of each petal; stigmas 4.

Parnassia fimbriata Banks. *Fringed Grass-of-Parnassus.*

Leaves tufted at the base on petioles 2–6 inches long; blades reniform or broadly cordate, $\frac{3}{4}$–$\frac{1}{2}$ an inch wide, thin, smooth, with about 7 principal veins. Flowers $\frac{3}{4}$ of an inch or more broad on a scape 8–12 inches high with a small cordate clasping bract about the middle; sepals $\frac{1}{4}$ of an inch long, elliptic, obtuse; petals obovate, pure white, fringed at the base, staminodia united into 5 fleshy obovate scales.

Common throughout the region in springy

places and damp mossy banks at the lower altitudes, flowering during July.

Parnassia montanensis Rydb. and Fernald. *Marsh Grass-of-Parnassus.* Leaves tufted at the base on short petioles, blades ovate with a cordate or rounded base ¾ of an inch long. Flowers solitary, on scapes 8 inches or more high with a large ovate bract below the middle; sepals lanceolate, acute, ¼ of an inch or more long, petals oval to elliptic only slightly larger than the sepals; staminodial scales with 7–9 gland-tipped filaments.

Throughout the Rockies in marshy ground and shaded river shores; flowering in June and early July.

Parnassia parviflora DC. *Small-flowered Grass-of-Parnassus.* Scapes slender, 4–12 inches high, usually bearing a clasping oval leaf at the middle. Basal leaves on slender petioles, oval or ovate, narrowed at the base, not cordate, ½–1 inch long. Flowers about ⅓ of an inch broad, sepals equalling or somewhat shorter than the elliptic sessile

petals; staminodia 5–7 at the base of each petal.

In wet gravelly places at the lower altitudes throughout the Rockies; flowering in July.

Parnassia Kotzebuei Cham. and Schl. *Alpine Grass-of-Parnassus.*

Much smaller than the preceding species. Basal leaves few on petioles less than an inch long; blades broadly ovate, ½ an inch long. Flowers on slender scapes 2–4 inches high, without any bract; sepals oblong, about ¼ of an inch long, equalling or exceeding the elliptic or oval 3-veined petals; staminodia short with 3–5 slender filaments.

Throughout the Rockies at high altitudes on the gravelly borders of alpine ponds or brooks, a very diminutive species, flowering in July.

Saxifragaceæ

Saxifrage Family

Stemmed or stemless herbs with alternate or sometimes opposite or more frequently

basal leaves; flowers perfect, racemose, cymose or paniculate; calyx 5-lobed or parted; petals 4 or 5, white, yellow or greenish or sometimes rose-coloured; stamens equal or twice the number of the petals; carpels 1–several, distinct or united.

Placentæ parietal.
  Flowers solitary and axillary; sepals 4; stamens 4–8. **Chrysosplenium.**
  Flowers in more or less elongated racemes.
    Flowers with 2 or 3 equal carpels.
      Flower-stalk axial from a bulbiferous rootstock. **Lithophragma.**
      Flower-stalk a lateral shoot from a stout scaly rootstock.
        Inflorescence racemose.
          Petals pinnately cut or pinnatifid.
            Base of the calyx campanulate deeper than the length of the sepals. **Tellima.**
            Base of the calyx saucer-shaped, shallower than the length of the sepals.
              Ovary more than half superior; disc inconspicuous. **Mitella.**
              Ovary wholly inferior, covered with the prominent disc. **Pectiantia.**
        Inflorescence paniculate. **Heuchera.**
    Flowers with 2 very unequal carpels. **Tiarella.**

Placentæ axial.
  Base of the calyx well developed, at maturity longer than the sepals.

Stamens 5, plant with short bulblet bearing rootstock. **Hemieva.**

Stamens 10.

Plants without caudices; only producing annual flowering stems. **Saxifraga.**

Plants with perennial leafy caudices, often with offsets. **Muscaria.**

Base of the calyx only slightly developed, unchanged at maturity.

Leaves alternate, sometimes all basal.

Plants stemless.

Corolla regular, petals about equal in shape and length. **Micranthes.**

Corolla irregular petals of different shape and length. **Spatularia.**

Plants with stems.

Carpels distinct; leaf-blades toothed. **Leptarrhena.**

Carpels partially united; leaf-blades entire. **Leptasea.**

Leaves opposite except sometimes on the flower-stalks. **Antiphylla.**

Chrysosplenium tetrandrum Th. Fries. *Golden Saxifrage.*

Perennial with a slender creeping rootstock; stems 1½–6 inches high, branched above. Leaves alternate, the lower ones on petioles 1–2 inches long; blades thick, reniform, ½ an inch or less wide, crenate with 3–5 broad teeth, shining above, paler beneath, upper ones larger and more

or less wedge-shaped. Flowers in small clusters in the axils of the upper leaves; sepals 4; stamens 4 opposite the sepals.

In shaded damp ground in the wooded areas through the Rockies at an elevation of 5000 to 6000 feet, where it often forms dense green carpets, the inconspicuous little flowers coming into blossom in June.

Lithophragma parviflora (Hook.) Nutt. *Lithophragma.*

Stems 4–12 inches high, slightly glandular-hairy, from a slender creeping rootstock with rosy bulblets. Leaves palmately divided to the base into 3–5 divisions, ½–1 inch long, twice ternately cleft into oblong or linear divisions; lower ones on petioles 1–2 inches long; stem leaves 1 or 2 similar, sessile. Flowers 3–8 in a slender raceme, base of the calyx and sepals ⅛ of an inch long; petals pure white, deeply 3–5 cut into narrowly oblong divisions.

On grassy slopes and gravelly places throughout the Rockies; flowering in June.

Tellima grandiflora (Pursh.) Dougl. *Tellima.*

Flowering branches 1–2 feet high, with long rough hairs, glandular above. Leaves reniform or cordate, sparingly rough-hairy, round lobed, and toothed with broadly ovate teeth; 1½–4 inches broad on hairy petioles 4–8 inches long; stem leaves short-petioled with well-developed stipules. Flowers numerous in an elongated raceme; sepals ovate ¼ of an inch long; petals white, purplish or pink with a pinnately cut blade; claws broadly wedge-shaped, ⅛ of an inch long, erect, blade spreading or reflexed with a rounded ovate body and tapering thread-like lobes.

Moist woods and crevices in the rocks, abundant in the Selkirks; flowering in June.

Mitella nuda L. *Naked Bishop's-Cap.*

Perennial, from a slender branched rootstock, producing long runners in late summer; flowering branches scape-like, naked, or rarely with a small leaf, 2–8 inches high, sparingly hairy. Leaves reniform

Mitella nuda L. (⅔ Nat.)
Naked Bishop's-Cap.

Pectiantia pentandra (Hook.) Rydb. (¼ Nat.)
Mitrewort.

$\frac{3}{4}$–2 inches in diameter, rounded, crenate or lobed, on petioles 1–3 inches long. Flowers few, in a loose raceme, saucer-shaped; calyx about $\frac{1}{4}$ of an inch broad, greenish-yellow; petals spreading about twice as long as the sepals, greenish-yellow, pinnately divided into thread-like divisions, resembling snow crystals in form.

Common in the cool woods and shaded mossy bogs throughout the Rockies; flowering in June.

Pectiantia pentandra (Hook.) Rydb. *Mitrewort.*

Flowering branches scape-like, 4–12 inches high, naked. Leaves broadly crenate with 9–11 more or less distinct round lobes, thin, 1–2$\frac{1}{2}$ inches broad on petioles, 2–4 inches long. Flowers $\frac{1}{8}$ of an inch broad in a slender loose raceme, green or often purplish inside; sepals broadly triangular-ovate, obtuse, and recurved; petals yellowish, deeply cut into slender thread-like divisions, twice as long as the calyx; stamens 5, opposite the petals.

Throughout the region in cool woods and shaded springy spots; flowering in early June at the higher altitudes.

Pectiantia Breweri (A. Gray) Rydb. *Mitrewort.*

Flowering branches 4–8 inches high, leafless. Leaves thin, broadly reniform with many shallow rounded lobes; petioles 2–4 inches long. Flowers in a loose raceme, green, occasionally in pairs; calyx $\frac{1}{8}$ of an inch wide; sepals obtuse and reflexed; petals deeply cut into thread-like divisions about twice as long as the sepals; stamens 5, opposite the sepals.

In damp woods throughout the region, growing with the previous species; flowering in early June.

Heuchera glabra Willd. *Smooth Alum-root.*

Flowering stems slender, 4–20 inches high, smooth, 1–3-leaved. Basal leaves on petioles, 2–8 inches long, cordate, deeply 5–7-lobed, thin, shining, 1–4 inches broad and as long or slightly longer, lobes

triangular-ovate, acute, doubly and sharply serrate. Flowers in a loose panicle 2–6 inches long; calyx with the turbinate base about $\frac{1}{8}$ of an inch long, sparingly fringed with hairs; petals white, broadly spatulate, acute, about twice as long as the sepals; stamens much exserted, with scarlet and orange anthers.

On damp shaded rocks, especially abundant in the Selkirks in the vicinity of Glacier.

Heuchera ovalifolia Nutt. *Round-leaved Alum-root.*

Flowering branches naked, densely glandular-hairy, 1–2 feet high. Leaves round-oval, $\frac{1}{2}$–$1\frac{1}{2}$ inches broad, $\frac{3}{4}$–2 inches long, rounded, slightly heart-shaped at the base, round-lobed and crenate with bristle-tipped teeth. Flowers in a short dense raceme less than 4 inches long, the deeply campanulate, yellowish, densely hairy base of the calyx, with the broadly oblong sepals $\frac{1}{4}$ of an inch long, petals usually wanting.

On dry rocky banks and hillsides throughout the region, flowering in midsummer.

Tiarella unifoliata Hook. *Foam Flower.*

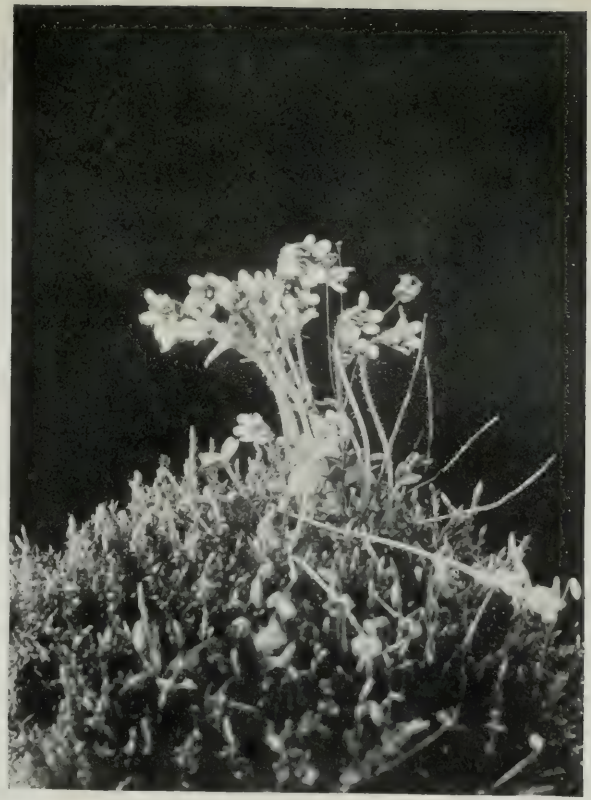
Flowering branches 6–15 inches high, 1–4-leaved. Leaves broadly cordate, coarsely 3–5-lobed with broadly ovate-acute lobes, doubly crenate with mucronate teeth; stem leaves short-petioled, basal, on petioles 2–6 inches long. Flowers in a narrow panicle; sepals whitish ovate-oblong, $\frac{1}{16}$ of an inch long, the linear-subulate, white petals and stamens fully three times as long; carpels oblong-acute, nearly half an inch long in fruit.

Abundant in damp rich woods throughout the region often-times carpeting the ground; flowering in June.

Hemieva ranunculifolia (Hook.) Raf. *Hemieva.*

Light yellowish-green; stems 8–10 inches high from a rosy-bulbous rootstock. Leaves ternately divided to the base, the middle division broadly wedge-shaped, $\frac{1}{2}$–1 inch long, rounded, 3-lobed, the lateral ones oblique and 4-lobed; basal, on petioles 2–4 inches long, stem

Saxifraga cernua L. (⅔ Nat.)
Nodding Saxifrage.



Saxifraga rivularis L. (⅔ Nat.)
Alpine Brook-Saxifrage.

leaves on short petioles dilated at the base, the uppermost sessile, merely 3-lobed at the apex. Flowers showy in a short dense corymb; the base of the calyx and sepals yellowish-green about $\frac{1}{8}$ of an inch long; petals white or yellowish, broadly spatulate, $\frac{1}{4}$ of an inch long; stamens 5, opposite the sepals, filaments and carpels more or less rosy in colour.

On wet rocky slopes in the Selkirks at Glacier, not common; flowering in June.

Saxifraga rivularis L. *Alpine-Brook Saxifrage.*

Stems 1–$3\frac{1}{2}$ inches tall, tufted, smooth or finely glandular-hairy. Leaves reniform in outline, $\frac{1}{8}$–$\frac{1}{2}$ an inch broad, thick, mainly 3-lobed, those of the stem sometimes entire, short petioled or sessile; basal leaves on slender petioles an inch or more long. Flowers small, base of the calyx and sepals $\frac{1}{8}$ of an inch long; petals oblong, or broadly wedge-shaped, white, slightly larger than the sepals.

An inconspicuous little plant growing on

wet rocks and beside alpine brooks at high altitudes throughout the region; flowering during midsummer.

Saxifraga cernua L. *Nodding Bulbous Saxifrage.* Stems 3–8 inches tall, leafy, somewhat glandular-hairy, growing in groups. Leaves reniform in outline ⅓–1 inch wide; the basal and lower stem-leaves long-petioled prominently, 3–7 lobed, the lobes linear to triangular-lanceolate; the upper stem leaves, 3–5-lobed. Flowers represented by clusters of rosy bulblets, except a single terminal one with the base of the calyx and sepals ¼ of an inch long, and wedge-shaped, the clawless white petals nearly half an inch long.

A rather striking alpine plant growing on wet rocks at Lake Louise and Moraine Lake; flowering in midsummer.

Muscaria adscendens (L.) Small. *Muscaria.* Somewhat glandular-hairy, 1–4 inches tall. Leaves ⅛–¼ of an inch long, mainly wedge-shaped or spatulate, 3-toothed or those

Muscaria caespitosa (L.) Haw. (½ Nat.)
Tufted Saxifrage.

Micranthes rhomboidea (Greene) Small. (⅓ Nat.)
Mountain Saxifrage.

of the stem entire. Flower-stalks sparingly branched above or throughout; sepals ovate or oblong-ovate $\frac{1}{16}$–$\frac{1}{8}$ of an inch long, acute or obtuse; petals white, wedge-shaped to oblong wedge-shaped, a third longer than the sepals, the claws slender or stout.

An alpine species with rosettes of basal leaves, not infrequent throughout the Rockies, along streams, and on shaded rocks; flowering in midsummer.

Muscaria cæspitosa (L.) Haw. *Tufted Saxifrage.*

Glandular-hairy, 2–6 inches tall. Leaves crowded at the base, sometimes densely so; blades $\frac{1}{4}$–$\frac{3}{4}$ of an inch long, 3-lobed at the apex, the lobes lanceolate or linear. Flower-stalks stout, 3–few-flowered, each bearing 2–3 leaves, base of the calyx $\frac{1}{8}$ to $\frac{3}{16}$ of an inch high, turbinate at the base, sepals ovate to ovate-lanceolate, $\frac{1}{16}$–$\frac{1}{8}$ of an inch long; petals white, narrowly obovate or oblong-ovate, $\frac{1}{4}$ of

an inch or more long, rounded at the apex.

An alpine species growing on moist, shaded rocks throughout the Rockies, frequent, often forming tufts of considerable size; flowering in June.

Micranthes rhomboidea (Greene), Small. *Alpine Saxifrage.*

Leaves forming a rosette, spreading or ascending $\frac{3}{4}$–2 inches long, ovoid or rhombic-ovoid, obtuse, crenulate or dentate-serrate, nearly smooth except the ciliate margins, mainly green, sometimes purplish beneath, abruptly or gradually narrowed into petiole-like bases, which are occasionally larger than the blades. Flowers in a compact terminal head on a copiously glandular, naked scape 3–10 inches high; sepals ovate to triangular $\frac{1}{16}$–$\frac{1}{8}$ of an inch long barely if at all ciliate, 3-veined; petals white, obovate or oblong-ovate, twice as long as the sepals, notched at the apex, seed pods green or purplish, the points spreading.

A frequent alpine plant in the more or

Micranthes Nelsoniana (D. Don.) Small. (½ Nat.)
Nelson's Saxifrage.

Micranthes Lyallii (Engler) Small. (⅔ Nat.)
Lyall's Saxifrage.

less moist, shaded situations throughout the Rockies; flowering in July.

Micranthes Lyallii (Engler) Small. *Lyall's Saxifrage.*

Leaves erect or ascending ½–2½ inches long, fan-shaped varying to suborbicular, typically wedge-shaped at the base, coarsely few-toothed above with the teeth mainly directed forward, smooth or nearly so, the petiole-like bases often longer than the blades. Flowering stems 3–24 inches tall, smooth or nearly so, sparingly branched above, commonly purple, few-flowered; petals white with 2 yellow blotches below the middle, broadly oblong or suborbicular, often slightly notched at the apex, twice as long as the sepals, often tinged and streaked with red on the outside; seed pods nearly ½ an inch high, purple or purple-tinged, usually 3 or 4 together, with pointed beaks.

An alpine form frequent throughout the region in damp, shady, or open places and along the borders of mountain streams;

a rather striking plant, flowering in July.

Micranthes Nelsoniana (D. Don.) Small. *Nelson's Saxifrage.* Leaves erect or ascending, 1–5 inches long, suborbicular or reniform, $\frac{3}{4}$–$1\frac{3}{4}$ inches in diameter, deeply cordate at the base, usually sparingly hairy on both sides, coarsely few-toothed with crenate, gland-tipped teeth. Flower-stem erect, $1\frac{1}{2}$–7 inches tall, glandular-villous, especially above, terminating in a compact head usually with purple or purplish bracts; sepals ovate or oblong-ovate $\frac{1}{6}$–$\frac{1}{8}$ of an inch long, ciliate; petals white, broadly oblong to ovate, twice as long as the sepals.

A rather rare though very beautiful alpine flower found throughout the region in moist places and along alpine brooks; flowering in June.

Spatularia Brunoniana Bong. *Tall Saxifrage.* Copiously glandular-hairy, 4–15 inches tall. Leaves crowded on the short rootstock, spatulate to oblanceolate-spatulate, 1–3 inches long, sharply and sometimes broadly

Spatularia Brunoniana (Bong.) Small. (¼ Nat.)
Tall Saxifrage.

Leptasea austromontana (Wiegand) Small. (⅓ Nat.)
Common Saxifrage.

toothed, mostly above the middle. Flower-stems solitary or several together, widely branching, bracts much smaller than the leaves; flowers terminating the stem, branches, and branchlets, but on many of the ultimate branchlets represented by clusters of green bulblets; sepals oblong-ovate to triangular-ovate, $\frac{1}{6}$ of an inch or less long, purple, reflexed; petals white, $\frac{1}{4}$ of an inch long or less, the three upper with lanceolate or oblong-lanceolate blades; two lower with elliptic or spatulate-elliptic blades; seed pods $\frac{1}{4}$ of an inch long with diverging tips. The commonest form in the Selkirks, everywhere along streams and banks.

Leptarrhena pyrolifolia (D. Don.) R. Br. *Leptarrhena.*

Caudex horizontal or ascending, clothed with folded leaf bases. Leaves leathery, oblong, or sometimes slightly broadest above or below the middle, $1\frac{1}{2}$–$3\frac{1}{2}$ inches long, obtuse, serrate or crenate-serrate, deep green and lustrous above, paler beneath, narrowed into winged petiole-like bases. Flower-

stalks 4–18 inches high, bearing 1 or 2 clasping leaves; flowers small and inconspicuous, at first congested in a compact head, becoming separated; sepals ovate, about as long as the base of the calyx, each with a terminal gland and usually some lateral glands; petals narrowly spatulate, white, $\frac{1}{8}$ of an inch long; seed pods $\frac{1}{4}$ of an inch long with slightly spreading tips; purplish.

Along alpine streams and in damp shaded places, rather abundant throughout the region at the higher altitudes; flowering in June.

Leptasea Van-Bruntiæ Small. *Fleshy Saxifrage.*

Stems decumbent. Leaves $\frac{1}{8}$–$\frac{1}{2}$ of an inch long, the blades very thick, flattish, smooth, ciliate on the margins, spine-tipped. Flowers 1–several on stalks, $1\frac{1}{2}$–3 inches tall, finely glandular-hairy, leafy, bearing larger leaves than the decumbent stems; sepals ovate to oblong ovate, $\frac{1}{8}$ of an inch long, smooth, more or less eroded at the apex; petals deep yellow, oblong, much

longer than the calyx; seed pods ¼ of an inch or more long.

A common species throughout the Rockies, forming mats on the wet gravel and sand of the shores and flood-plains of the rivers and torrent fans at the bases of the moraines; flowering throughout June and July.

Leptasea austromontana (Wiegand) Small. *Common Saxifrage.*

Leaves of the caudices ½ an inch or less long, stiff and crowded, but more or less spreading, the blades narrowly lanceolate to subulate, ciliate, slender, spine-tipped. Flower-stalks 1½–6 inches tall, nearly smooth or finely glandular-hairy, bearing several leaves which are smaller than those of the caudices; sepals ovate, sometimes rather narrowly so, ⅛ of an inch long, smooth or sparingly ciliate, obtuse; petals white, usually yellow-spotted, oblong to oblong-lanceolate, ¼ of an inch or more long, filaments slender; seed pods often nearly ½ an inch long.

Common everywhere throughout the

Rockies at the lower altitudes on bare rocks and stony slopes, frequently forming mats a foot or more across; flowering in June.

Antiphylla oppositifolia (L.) Fourr. *Purple Saxifrage.* Plants in dense mats, leaves densely folded together except on the flower-stalks and sometimes on the elongated stems, 4-ranked, the blades obovate to spatulate, $\frac{1}{4}$ of an inch long, ciliate, keeled. Flower-stalks $\frac{1}{2}$–1 inch long or sometimes shorter when young, leafy; sepals oblong to ovate, $\frac{1}{8}$ of an inch long, ciliate all around; petals lilac or purple, elliptic or oval, showy, $\frac{1}{3}$ of an inch long, each narrowed into a stout claw.

Usually a high alpine species and not infrequently forming mats of considerable size; throughout the region, flowering in July.

Grossulariaceæ

Gooseberry Family

Shrubs, usually with lobed, petioled leaves and racemose or subsolitary axillary or

lateral flowers, the pedicels bracteolate; calyx tube attached to the ovary, the limb 4–5-lobed, often coloured; petals, 4–5, inserted on the throat of the calyx, small, scale-like, often included; stamens 4–5, inserted with the petals; berry globose or ovoid, pulpy, the calyx persistent on its summit.

Ribes lacustre (Pers.) Poir. *Swamp Gooseberry.* Stems prostrate or ascending, 3–4 feet long, very prickly when young, spines slender and weak, generally clustered. Leaves nearly orbicular, thin, smooth or hairy along the veins beneath, deeply 5–7 lobed, 1–2 inches broad, the lobes acutish, incised-dentate. Flowers in racemes of 5–9; calyx rotate, $\frac{1}{6}$ of an inch broad, spreading, green or purplish; petals exceeding the calyx; ovary glandular-hispid; berry black.

A very abundant gooseberry throughout the region in cool damp woods and bogs at the lower elevations; flowering in June.

Ribes setosum Lindl. *Bristly Gooseberry.* Stems erect, 3–4 feet high, with numerous stout bristles, especially on the young wood; axillary spines 1–3 together, rather stout and spreading. Leaves slender-petioled, more or less finely hairy, at least when young, ½–1 inch wide, broadly ovate or orbicular, 3–5-lobed, the lobes incised or coarsely toothed. Flowers 2–3, ¼–½ an inch long on very short pedicels; calyx tube cylindric, greenish-white or pinkish; petals white; berries small, purple or blue and very sour.

Frequent throughout the Rockies on lake shores and in thickets at the lower altitudes; flowering in June.

Ribes oxyacanthoides L. *Northern Gooseberry.* Spines generally solitary, light-coloured, ¼–½ of an inch long; prickles commonly wanting. Leaves petioled, roundish, subcordate and 5-lobed, hairy or nearly smooth, the lobes deeply toothed or crenate. Flowers greenish-purple or white, little more than

$\frac{1}{4}$ of an inch long; berry half an inch in diameter, smooth, reddish-purple and sweet when ripe.

Throughout the Rockies at the lower elevations, in open ground and on stony hillsides; flowering in June; fruit ripening in July.

Ribes Howellii Greene. *Howell's Currant.*

Stems ascending, crowded, 2–5 feet high, without spines. Leaves triangular, 2–3 inches in diameter, cordate at the base, deeply 5-lobed, the acute lobes doubly serrate, smooth above, often resinous-dotted beneath, petiole as long as or longer than the blade. Flowers $\frac{1}{3}$ of an inch broad in a loose raceme, bracts linear, about $\frac{1}{16}$ of an inch long, much shorter than the slender, glandular pedicels; calyx rotate with broad spatulate lobes; petals red, narrowly spatulate, shorter than the calyx lobes; berries red.

A rather showy plant with a pungent, skunk-like odour when bruised, growing on wet, shaded rocks and in springy places

throughout the region, at the lower altitudes; flowering in June.

Rosaceæ

Rose Family.

Herbs, shrubs, or trees with alternate leaves and perfect flowers; calyx free or adnate to the ovary, 5–9-lobed; petals equal in number to the calyx lobes, distinct or none; stamens usually numerous and distinct; fruit mostly follicles or achenes.

Carpels few; in fruit becoming 2–several sided.
Stamens united at the base; flowers racemose. **Lutkea.**
Stamens not united at the base; flowers in panicles or corymbs.
Shrubs with simple leaves, flowers perfect. **Spiræa.**
Herbs with compound leaves; flowers diœcious. **Aruncus.**
Carpels few or many; in fruit becoming achenes or drupelets.
Fruit consisting of drupelets, usually united. **Rubus.**
Fruit consisting of achenes.
Achenes enclosed in a fleshy fruit; prickly shrubs. **Rosa.**
Achenes on a plane or concave receptacle; herbs.
Styles deciduous, naked.

Tiarella unifoliata Hook. (¼ Nat.)
Western Foam-Flower.

Lutkea pectinata (Pursh) Kuntze. (⅔ Nat.)
Cut-Leaved Lutkea.

Styles terminal. **Potentilla.**
Styles lateral.
Carpels hairy; shrubs. **Dasyphora**
Carpels smooth; herbs.
Stamens 5; carpels 10–15. **Sibbaldia.**
Stamens 20; carpels numerous.
Leaves trifoliate; receptacle fleshy. **Fragaria.**
Leaves pinnate, receptacle not fleshy.
Flowers dark purple. **Comarum.**
Flowers yellow.
Plant with stolons; flowers solitary. **Argentina.**
Styles persistent, mostly plumose.
Calyx lobes and petals 8 or 9. **Dryas.**
Calyx lobes and petals 5.
Style jointed, upper part deciduous. **Geum.**
Style not jointed, upper part plumose. **Sieversia.**

Lutkea pectinata (Pursh.) Kuntze. *Cut-leaved Lutkea.*

Smooth, stems cæspitose, very leafy. Leaves trifoliate, persistent, leaflets deeply 2–4-lobed, the lateral ones decumbent, forming a broad petiole. Flowering stems 2–6 inches high with a dense terminal raceme of many white flowers, about $\frac{1}{4}$ of an inch broad; calyx lobes ovate, acute; petals 5, obovate, exceed-

ing the calyx; stamens numerous, shorter than the petals.

Frequent throughout the Selkirks, on alpine slopes and beside streams at the higher elevations; flowering in June.

Spiræa densiflora Nutt. *Pink Spiræa.* Stem 2–4 feet high, reddish. Leaves ovate or elliptical, serrulate at the apex, entire below, narrowed at the base to a very short petiole or the lowest sessile, dark green on both sides, ¾–1 inch long. Flowers small, deep rose-colour in dense, round, leafy, bracted corymbs, terminating the numerous branches.

In moist, exposed, rocky places and on slopes at the lower altitudes, frequent in the Selkirks; flowering in June.

Spiræa lucida Dougl. *Birch-leaved Spiræa.* Stems erect, mostly simple, 1–2 feet high, from horizontal running rootstocks. Leaves, the lower ones small, obovate; upper, oval to oblong, 1–2 inches long, often obscurely lobed and doubly serrate

Rubus pedatus Smith. (⅔ Nat.)
Creeping Raspberry

above the middle, smooth throughout, dark green above, paler beneath. Flowers white or tinged with pink in a large flat branching terminal corymb.

Abundant throughout the region on hillsides and dry banks; flowering during July.

Aruncus Aruncus (L.) Karst. *Goat's-Beard.*

Smooth throughout, stem erect, somewhat branched, 2–4 feet high. Leaves long-petioled, 2–3 pinnate, leaflets 1–3 inches long, ovate or lanceolate, thin, acuminate or acute at the apex, rounded or slightly heart-shaped at the base, doubly serrate or incised. Flowers small, white, in an elongated spike.

Frequent along streams throughout the Selkirks; flowering during June and July.

Rubus pedatus Smith. *Creeping Raspberry.*

Stems slender, trailing, 1–3 feet long, unarmed, rooting at the nodes, pubescent. Leaves trifoliate, leaflets obovate, cuneate at the base, $\frac{3}{4}$–1 inch long incised, lateral leaflets often parted to the

base, smooth or sparingly hairy. Flowers usually solitary, on long slender pedicels, white or rosy, $\frac{1}{8}$ of an inch or more broad; sepals ovate-lanceolate, entire or incised, exceeding the petals; berry of 1–6 large red, juicy drupelets.

Frequent throughout the region in cold damp woods, forming masses of considerable size; flowering during June.

Rubus arcticus L. *Arctic Raspberry.* Stem low, herbaceous, unarmed, finely hairy, 3–10 inches high, sometimes leafless below. Leaves 3-foliate, leaflets sessile or short-stalked, rhombic-ovate or obovate, coarsely and unequally serrate or slightly lobed, $\frac{3}{4}$–1 inch long. Flowers solitary or occasionally 2, slender-peduncled; petals obovate, pink, $\frac{1}{2}$–1 inch long; sepals acute, equalling or shorter than the petals, reflexed; berry light red, fragrant and edible.

In cold mossy thickets and swamps throughout the region, the first flowers ap-

pearing in May and early June when the stems are but a few inches high, with the leaves hardly unfolded; in midsummer it frequently flowers again from branched stems 8–10 inches high and appearing like a different plant.

Rubus Americanus (Pers.) Britton. *Dwarf Raspberry.*

Stems herbaceous, trailing or ascending, unarmed, 6–18 inches or more long, somewhat hairy. Leaves petioled, 3-foliate or rarely 5-foliate leaflets rhombic-ovate, smooth or nearly so, acute, the lateral ones mostly rounded, terminal, wedge-shaped at the base, all sharply serrate. Flowers 1–3 on a slender glandular-hairy peduncle, ½ an inch or less broad; petals 5–7, white, spatulate-oblong, erect, rather longer than the acuminate calyx lobes; fruit red-purple, half an inch long.

In cold moist woods and swampy places throughout the region; flowering in May and June.

Rubus parviflorus Nutt. *Salmonberry.*

Stems shrubby, 3–8 feet high, smooth or more or less glandular-hairy. Leaves round-cordate in outline, palmately 3–5-lobed, the lobes acute or acutish, rarely acuminate, coarsely and unequally serrate. Flowers few, 1–2 inches broad, white, in corymbose, terminal heads, calyx lobes tipped with a long slender appendage.

Borders of woods, and in thickets among rocks, throughout the region, but most abundant in the Selkirks; flowering in June and July.

Rubus strigosus Michx. *Wild Red Raspberry.*

Stems shrubby, biennial, 18 inches to 4 feet high, usually densely clothed with weak glandular bristles or the older stems with small hooked prickles. Leaves pinnately 3–5-foliate, leaflets ovate or ovate-oblong, acuminate, sharply and irregularly serrate or slightly lobed, rounded at the base, 1–3 inches long. Flowers ½ an inch broad in a loose raceme on slender

Rubus parviflorus Nutt. (⅔ Nat.)
Salmon-Berry.

pedicels, curved in fruit; petals white, ascending, about equalling the spreading acuminate sepals; fruit dark red, sweet and very juicy.

The common red raspberry throughout the region in dry and rocky places; flowering in June.

Dasyphora fruticosa (L.) Rydb. *Shrubby Cinquefoil.*

Shrubby, much branched; stems erect or ascending, very leafy, 6 inches to 3 feet high, the bark shreddy. Leaves pinnate with 5–7 oblong, entire, acute leaflets, with long silky hairs and revolute margins. Flowers bright yellow, $\frac{3}{4}$–$1\frac{1}{2}$ inches broad, usually solitary at the ends of the branches.

A very abundant plant throughout the region, in swampy grounds, gravelly river shores, on dry slopes and alpine meadows, flowering throughout the summer.

Sibbaldia procumbens L. *Sibbaldia.*

Stems densely tufted, decumbent or creeping, 1–4 inches long. Leaves 3-foliate, leaflets wedge-shaped, 3–5-toothed at the apex with scattered hairs on both sides.

Flowers ¼ of an inch broad, greenish-yellow; petals very small, not exceeding the calyx.

Frequent throughout the region on rocks, usually in dry, exposed situations at elevations varying from 4000 to 10,000 feet; flowering during June and July.

Fragaria glauca (S. Wats.) Rydb. *Wild Strawberry.*

Plant spreading, 3–6 inches tall, hairy, forming new plants by the running stems after flowering. Leaves tufted from the root, very hairy, palmately 3-foliate; leaflets obtuse, strongly serrate, the teeth gland-tipped; lateral leaflets ovate, oblique on the inside, shorter than the terminal one; terminal leaflet broadly ovate with a wedge-shaped base. Flowers white, ¾ of an inch broad; petals slightly longer than the sepals, borne on a scape about ⅓ longer than the leaves. Fruit ovoid, rather small.

On grassy banks and roadsides throughout the Rockies; flowering in late May and early June.

Fragaria glauca (S. Wats.) Rydb. (½ Nat.)
Wild Strawberry.

Amelanchier florida Lindl. (⅓ Nat.)
Service-Berry.

Comarum palustre (L.) *Marsh Cinquefoil.*

Smooth, decumbent at the base, 6 inches to 2 feet long. Leaves pinnate, the lower long-petioled with 5–7 oblong or oblanceolate, sharply serrate leaflets, which are lighter-coloured and more or less hairy beneath; upper leaflets similar, 3–5. Flowers few, in an open cyme; calyx lobes purple within, acuminate, nearly ½ an inch long, enlarging in fruit; petals much shorter than the sepals.

A marsh plant frequent throughout the region in very wet situations, at the lower altitudes; flowering in July.

Argentina Anserina (L.) Rydb. *Silver-weed.*

Herbaceous, spreading by runners. Leaves all at the root, interruptedly pinnate with 7–21 leaflets and smaller ones interposed; oblong, sharply serrate, dark green above, soft, white-hairy beneath. Flowers bright yellow, ½–1 inch broad, solitary on long pedicels, petals exceeding the ovate, acute, calyx lobes.

In open and waste ground and meadows

throughout the Rockies at the lower altitudes; flowering during June and July.

Potentilla nivea L. *Snowy Cinquefoil.* Stem 4–8 inches high, woody at the base, with long silky hairs. Leaves 3-foliate, the lower petioled; leaflets oblong or obovate, usually deeply cut, densely, white-hairy beneath, green and loosely soft-hairy above, ¾-1 inch long. Flowers 1-5, bright yellow, ½-¾ of an inch broad; sepals silky, lanceolate, shorter than the broadly-ovate, notched petals.

Frequent throughout the Rockies in open, rocky situations; flowering during June and July.

Potentilla dissecta Pursh. *Cut-leaved Cinquefoil.* Stem decumbent or ascending 4–8 inches high from a woody base, more or less silky-villous or nearly smooth. Leaves pinnate or tripinnate with 5–7 lanceolate, deeply cut leaflets, usually glaucous and with ciliate edges. Flowers few, bright yellow, ½ an inch or more broad with notched petals, in an open cyme.

In open alpine meadows and slopes throughout the region at the higher altitudes; flowering during June and July.

Potentilla multisecta (Wats.) Rydb.

Much like the preceding species but much more hairy throughout and with more divided leaves. Flowers in a loose cyme on scapes 4–6 inches high, not quite so large as in the preceding nor as brilliantly coloured.

Dry rocky summits and ledges throughout the Rockies; flowering in June.

Potentilla uniflora (Ledeb.) *Alpine Cinquefoil.*

Densely cæspitose from a woody base. Leaves closely tufted, small, palmately divided, leaflets deeply cut, densely white-woolly on both surfaces. Flowers solitary on short peduncles, bright yellow, half an inch or more broad; petals broadly obovate, notched at the apex, much longer than the densely soft-hairy lanceolate sepals.

A high alpine species in dry stony ground throughout the Rockies, not common; flowering in July.

Geum macrophyllum Willd. *Large-leaved Avens.* Stout, erect, stiff-hairy, 1–3 feet high. Leaves lyrate-pinnate with broad foliaceous stipules, basal leaves petioled, the terminal segment much the largest, reniform, dentate, 3–7-lobed; lateral leaflets 3–6 oval or obovate with smaller ones interspersed. Flowers several, short pedunculed, borne in a terminal head; bright yellow, nearly ½ an inch broad; petals longer than the acuminate sepals; receptacle nearly smooth.

In damp places and low grounds throughout the region, most abundant in the Selkirks; flowering in June.

Geum strictum Ait. *Yellow Avens.* Hairy, branched above, 2–4 feet high. Stipules broad, foliaceous; basal leaves lyrate-pinnate; leaflets 5–7, obovate, cuneate, dentate or lobed, the terminal one largest, broadly ovate or cuneate, stem leaves sessile or short-petioled with 3–5 ovate or oblong, acute segments. Flowers yellow, ½ an inch broad; receptacle downy.

a Geum strictum Ait. Yellow Avens.
b Sieversia ciliata (Pursh) Don. Long-Plumed Purple Avens.
(⅔ Nat.)

In swamps or low grounds throughout the region; flowering in June.

Sieversia ciliata (Pursh) Don. *Long Plumed Purple Avens.*

Soft-hairy, scapose; scape 4–18 inches high, simple, 3–8-flowered at the summit. Basal leaves petioled, interruptedly pinnate with many small leaflets, among the numerous obovate, deeply cut larger ones. Flowers ½ an inch broad of 5 pale purplish-pink petals hardly exceeding the calyx and spreading linear red bractlets; styles plumose in fruit, 1–2 inches long.

In dry open grounds extending into the Rockies from the plains, where it is especially abundant, to the lower slopes and valleys throughout the region; flowering in June.

Dryas octopetala L. *White Mountain-Avens.*

Stems prostrate, branched, 3–6 inches long. Leaves oblong or ovate, ½–1 inch long, obtuse at each end, closely crenate, dark green and shining above, densely white-woolly beneath. Flowers solitary on

slender pedicels, white, an inch or more broad; petals longer than the 6–8 spreading linear sepals; stamens numerous, anthers bright yellow; styles conspicuously plumose in fruit.

Frequent in dry stony ground throughout the Rockies at elevations ranging from 4000 to 10,000 feet, forming dense mats of considerable size on the surface of the ground; flowering in June.

Dryas Drummondii Richards. *Drummond's Mountain-Avens.*

Similar in manner of growth and general appearance to the preceding species. Leaves generally narrower at the base, the lobes dentate-crenate. Flowers ½ an inch long, campanulate, drooping on a densely woolly pedicel; sepals ovate, acute, black glandular-hairy; petals lanceolate, obtuse, bright yellow, about twice the length of the sepals; stamens included; styles numerous, conspicuously plumose in fruit.

In gravel and loose stony soil throughout the Rockies, especially abundant on river shores and flood-plains, like the previous

a Dryas octopetala L. White Mountain Avens.
b Dryas Drummondii Rich. Drummond's Mountain Avens.
(⅞ Nat.)

species frequently forming mats of considerable size; flowering in June.

Rosa Macounii Greene. *Macoun's Rose.*

Stems branched, 2–3 feet high, prickly. Leaves pinnate, leaflets large, $\frac{3}{4}$–$1\frac{1}{2}$ inches long, oval, coarsely toothed. Flowers solitary, on slender pedicels, bright pink, petals broadly obovate, an inch or more long, sepals entire with a long acuminate obtuse tip, persistent and erect in fruit, fruit globose, bright scarlet.

The wild rose of the region, in open ground, on slopes, borders of woods, stream and river banks throughout the Rockies; flowering in late June and early July.

Pomaceæ

Apple Family

Trees and shrubs with alternate leaves, and regular, perfect flowers; calyx superior, 5-toothed; petals 5; stamens numerous; fruit a more or less fleshy pome.

Leaves pinnate. **Sorbus.**
Leaves simple, entire-toothed or lobed. **Amelanchier.**

Sorbus sambucifolia (Cham. and Schl.) Roem *Western Mountain-ash.*

A small tree with smooth bark. Leaves pinnate, leaflets 5–15, ovate-lanceolate or oval, obtuse or short-pointed, serrate, smooth and dark green above, pale and usually more or less hairy beneath, especially along the veins, seldom over 2½ inches long. Flowers white, nearly ½ an inch across in a compound flat cyme, 2–4 inches broad; petals spreading, short-clawed, obovate; stamens numerous; fruit bright scarlet, more than ¼ of an inch in diameter.

In moist stony ground throughout the region; flowering in June.

Amelanchier alnifolia Nutt. *North-western June-berry.*

A shrub, soft-hairy when young, at length nearly smooth. Leaves thick, broadly elliptic or almost orbicular, very obtuse and often truncate at the apex, round or subcordate at the base; coarsely dentate above the middle, 1–2 inches long. Flowers in rather short, dense

racemes, pedicels short; petals oblanceolate, $\frac{1}{4}$–$\frac{3}{4}$ of an inch long, 2–4 times the length of the calyx; fruit purple when ripe and very sweet.

On slopes at the lower altitudes throughout the region, flowering in June.

Drupaceæ

Plum Family

Trees or shrubs, the bark exuding gum. Leaves alternate, petioled, serrate, the teeth and petiole often glandular; flowers regular, perfect; calyx 5-lobed inferior, deciduous; petals 5, inserted on the calyx; stamens numerous, inserted on the petals; fruit a 1-seeded drupe.

Prunus demissa (Nutt.) Walp. *Western Wild Cherry.* A shrub or small tree. Leaves thick ovate or broadly oval, acute or slightly obtuse, serrulate with short teeth. Flowers $\frac{1}{4}$ of an inch or more broad, in drooping racemes at the ends of the leafy branches; drupe dark purple or

black, globose, over ¼ of an inch in diameter.

In thickets in the Rockies, frequent in the vicinity of Banff; flowering in May and early June.

Papilionaceæ

Pea Family

Herbs or vines with alternate, compound leaves and irregular, perfect, yellow, purple, blue, or white flowers, mainly in racemes; calyx 4–5-toothed; petals more or less united or separate, consisting of a broad upper one (standard), two lateral ones (wings), and two front ones more or less united (keel).

Herbs; leaves unequally pinnate, not tendril bearing.
  Pods not jointed.
    Keel of the corolla blunt.
      Pod not much swollen, fleshy, leathery or papery; flowers blue or purple. **Astragalus.**
      Pods much inflated, membranous; flowers white. **Phaca.**
      Pods flat, both sutures prominent externally. **Homalobus.**
    Keel of the corolla acute. **Aragallus.**
  Pods jointed, flowers purple or white. **Hedysarum.**
Herbaceous veins; leaves evenly pinnate, with tendrils.

Style slender with a tuft of hairs at the summit.
Vicia.

Style flattened, bearded along the inner side.
Lathyrus.

Astragalus adsurgens Pall. *Ascending Milk-vetch.*

Stems whitish with close hairs or nearly smooth, ascending or decumbent, 4–18 inches long, simple or branched at the base. Leaflets 15–25 oval or linear-oblong, sometimes notched at the apex, narrowed at the base, ½–1 inch long; peduncles exceeding the leaves. Flowers purplish, ½–¾ of an inch long in dense short spikes; calyx villous with long partly black hairs, ½ the length of the corolla, with slender teeth, half the length of the campanulate tube.

In open ground at low altitudes, probably the most frequent of the vetches on the eastern slopes of the Rockies, often forming great patches of blue during June.

Astragalus hypoglottis L. *Purple Milk-vetch.*

Hairy or nearly smooth, stems decumbent or ascending, slender, branched at the base, usually low, but ranging from 6–24 inches long. Leaves 2–5 inches long with

17–25 leaflets which are oblong or elliptic, obtusish and usually notched at the apex, rounded at the base ¼–½ an inch long. Flowers violet-purple, ½ to nearly an inch long in dense heads, calyx nearly ⅓ the length with long black and white hairs.

Frequent at the lower altitudes, in dry ground and roadsides on the eastern slopes of the Rockies, particularly in the region around Banff; flowering in early June.

Astragalus alpinus L. *Alpine Milk-vetch.*

Ascending or decumbent, branching from the base, 6–15 inches high, slightly hairy or smooth. Leaves 2–5 inches long, with 13–25 oval or elliptic, obtuse or retuse leaflets, narrowed or rounded at the base, ¼–½ an inch long. Flowers ½ an inch or more long, pale violet, the keel commonly darker, in short rather open racemes; calyx about ⅓ the length of the corolla, with short black hairs.

The most dainty of any of the vetches, frequent in rocky soil in slightly shaded

situations throughout the Rockies at the lower altitudes; flowering during June and July.

Astragalus convallarius Greene. *Slender Milk-vetch.*

Stems slender, ascending and rigid, 10–18 inches high, branching from the base; hairy throughout. Leaves 3–6 inches long with 9–17 narrowly linear, silky leaflets ½–1 inch long, remote. Flowers pale violet or mauve, half an inch or more long, scattered in a slender raceme 3–5 inches long; peduncles much longer than the leaves; calyx about ⅓ the length of the corolla with scattered white or brownish hairs.

On the eastern slopes of the Rockies in dry stony ground at the lower altitudes; flowering in early June.

Astragalus Macouni Rydb. *Macoun's Vetch.*

Stems 18–24 inches high, stout and leafy, slightly striate and nearly smooth. Leaves 2–4 inches long, thin, odd-pinnate with 4–8 pairs of obtuse, oblong, or oval leaflets, ½–1 inch long. Flowers

cream-coloured, tinged with blue, in heads 1½–3 inches long, on peduncles 4–10 inches long, from the axils of the upper leaves; calyx ⅛ of an inch long, black-hairy, lobes very slender and short; corolla ¼ of an inch or more long.

Frequent in more or less moist open ground throughout the Rockies at varying altitudes; flowering during June and early July.

Phaca Americana (Hook) Rydb. *Arctic Milk-vetch.*

Erect, nearly simple and smooth, 1–2 feet high. Leaves 3–6 inches long with 7–17 oval or ovate-lanceolate obtuse leaflets, ¾–1½ inches long. Flowers white, ¾ of an inch long in loose racemes on peduncles equalling or exceeding the leaves; pedicels slender, ½ an inch long in fruit; pod membranous, inflated, an inch long.

In moist or wet rocky shaded places throughout the Rockies; flowering during June and early July.

Phaca americana (Hook.) Rydb. (½ Nat.)
Arctic Vetch.

Homalobus aboriginorum (Richards) Rydb. (½ Nat.)
Indian Vetch.

Homalobus aboriginorum (Richards) Rydb. *Indian Vetch.*

Stems erect and branching, 6–18 inches high, hairy throughout, from an enlarged root. Leaves pinnate with 7–11 linear leaflets; stipules ovate, acute, foliaceous. Flowers white, tinged with mauve, in a loose raceme 1–2 inches long; peduncles longer than the leaves, calyx black-hairy, about $\frac{1}{8}$ of an inch long, with slender teeth nearly half as much longer; corolla more than twice the length of the calyx.

An abundant species at the lower altitudes in open dry ground on the eastern slopes of the Rockies; flowering in early June.

Aragallus monticola (A. Gray) Greene. *Mountain Oxytrope.*

Silvery-pubescent throughout, with appressed or slightly spreading hairs; tufted. Leaves basal, 3–6 inches long with 9–19 linear-oblong or lanceolate, acute or obtusish leaflets $\frac{3}{4}$–1 inch long. Flowers pale yellow or creamy-white $\frac{3}{4}$ of an inch or more long in dense heads, on

peduncles longer than the leaves; calyx nearly half as long as the corolla, with long white and short black hairs.

Frequent throughout the Rockies in dry stony and alpine meadows and slopes, at varying elevations; flowering from June to early July.

Aragallus Lamberti (Pursh) Greene. *Loco Weed.*

Tufted, the branches of the caudex short; scapes few or several, erect, rather slender, 4–20 inches high. Leaves several, mostly erect, shorter than the scapes; leaflets 10–15 pairs, mostly oblong-lanceolate, from sparsely soft-pubescent to lightly canescent, acute, ½–1 inch long. Flowers pale yellow, ½ an inch long and twice as long as the calyx, in a loose head, 2–4 inches long.

Abundant in the open ground on the eastern slopes of the Rockies; a strikingly handsome vetch frequently found in masses of considerable extent, especially in the region around Banff; flowering in June and early July.

Aragallus splendens (Dougl.) Greene. *Showy Oxytrope.*

Densely silky, silvery-villous, acaulescent, and tufted. Leaves 4–9 inches long, erect; leaflets very numerous, in verticels of 3–6, oblong or oblong-lanceolate, acute or acutish at the apex, rounded at the base, ½ to nearly an inch long. Flowers deep purple, about ½ an inch long in dense spikes on peduncles exceeding the leaves.

A very showy plant frequently flowering in considerable masses in the open grounds on the eastern slopes of the Rockies and dry alpine meadows; flowering in June.

Aragallus viscidulus Rydb. *Sticky Oxytrope.*

Tufted, with parts of the old leaves remaining. Leaves all basal, 4–6 inches long with 8–15 pairs of leaflets, loosely villous-pubescent, oblong, obtuse or acutish, ¼ to nearly ½ an inch long, glandular on the margins. Flowers nearly ½ an inch long varying from pink to dark purple, in loose spikes on glandular sticky scapes,

much longer than the leaves; calyx more than half as long as the corolla with white and shorter black hairs; calyx teeth and bracts of the inflorescence densely glandular.

In dry open ground and alpine meadows through the Rockies at the lower altitudes, flowering in early June and forming dense tufted masses of brilliant pink, blue, or purple flowers; probably the most striking species in the vicinity of Banff.

Aragallus deflexus (Pall.) Heller. *Drooping-fruited Oxytrope.*

Loosely soft-pubescent or silky, decumbent or ascending 10–18 inches high. Leaves 4–6 inches long with 12–16 pairs of lanceolate to oblong, acute leaflets, $\frac{1}{4}$–$\frac{1}{2}$ an inch long. Flowers small, pale purple, little more than $\frac{1}{4}$ of an inch long in slender spikes 2–4 inches long on peduncles much surpassing the leaves. Calyx nearly as long as the corolla, with short black and longer white hairs; fruit strongly reflexed.

In moist open ground throughout the

Aragallus viscidulus Rydb. (⅓ Nat.)
Sticky Oxytrope.

Aragallus deflexus (Pall.) Heller. (½ Nat.)
Drooping Vetch.

eastern Rockies at the lower altitudes; flowering in July.

Aragal'us inflatus (Hook) A. Nelson. *Inflated Oxytrope.*

Acaulescent or more or less so, 1–4 inches high, soft-hairy. Leaves pinnate with 5–11 pairs of short linear-lanceolate or oblong leaflets. Flowers violet-purple, 1 or 2 on the peduncles which scarcely exceed the leaves; calyx densely dark-hairy; pods much inflated.

On high alpine slopes and summits through the Rockies, not a common plant but probably more general than is now known; flowering in July.

Hedysarum americanum (Michx.) Britton. *Purple Hedysarum.*

Stem erect or somewhat decumbent, smooth or nearly so, 6 inches to 2½ feet high, generally simple. Leaves 2–8 inches long with 11–21 oblong or oblanceolate-obtuse leaflets, ½ to nearly 1 inch long. Flowers violet-purple or nearly white, deflexed, ½–¾ of an inch long in rather

loose elongated racemes; calyx teeth ovate-acute, shorter than the tube.

One of the taller of the vetches growing in open stony places and slides throughout the Rockies at the lower altitudes, flowering in July.

Hedysarum sulphurescens Rydb. *Yellow Hedysarum.*

Erect, 12–15 inches high, minutely hairy. Leaves with 5–6 pairs of oblong-elliptic, obtuse-cuspidate leaflets, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, finely hairy beneath. Flowers bright yellow, over $\frac{1}{2}$ an inch long; 15–30 in a rather dense raceme; wings exceeding the vexillum but shorter than the keel.

Throughout the Rockies in open woods and meadows up to 8000 feet elevation; flowering in June and July.

Hedysarum Mackenzii Richards. *Mackenzie's Hedysarum.*

Stems erect or decumbent, 12–18 inches high, usually minutely hairy. Leaves 3–6 inches long with 11–19 oblong-elliptic leaflets about $\frac{1}{2}$ an inch long. Flowers $\frac{3}{4}$ of an inch long, reddish-purple, 20–30 in loose

racemes on peduncles longer than the leaves; calyx teeth very slender, longer than the tube.

On slides and in loose stony soil throughout the Rockies at varying altitudes; flowering during June and July.

Vicia Cracca L. *Cow Vetch.*

Finely hairy or sometimes nearly smooth; stems tufted, slender, and weak, climbing or trailing 2–4 feet long. Leaves tendril-bearing 2–3 inches long of 18–24 thin, linear or linear-oblong, obtuse or acutish, mucronate leaflets, $\frac{1}{3}$–$\frac{3}{4}$ of an inch long. Flowers deep bluish-purple, $\frac{1}{2}$ an inch long or less in dense spike-like racemes 1–4 inches long on peduncles equalling or exceeding the leaves.

In dry or moist soil throughout the Rockies at the lower elevations, flowering during June and July.

Vicia americana Muhl. *American Vetch.*

Smooth or some with appressed hairs, trailing or climbing 2–3 feet long. Leaves nearly sessile, 2–3 inches long, tendril-bearing, with 8–14 elliptic, ovate or ob-

long leaflets, ½–1½ inches long, obtuse or sometimes notched or mucronulate at the tip. Flowers bluish-purple about ¾ of an inch long, 3–9 in loose racemes, on peduncles usually shorter than the leaves.

In moist ground at the lower altitudes throughout the Rockies, climbing over the surrounding shrubs and herbaceous plants; flowering in July.

Vicia linearis (Nutt.) Greene. *Narrow-leaved American Vetch.*

Smooth or nearly so; stems weak, often zigzag, 1–2 feet long. Leaves tendril-bearing, with 4–7 pairs of narrowly linear or linear-oblong leaflets, 1–3 inches long, entire, acute and mucronate at the tip. Flowers purple or purplish, about ¾ of an inch long; 2–6 in loose racemes, on peduncles shorter than or about equalling the leaves.

In dry soil at low altitudes throughout the Rockies especially near the line of the railway; flowering during July.

Aragallus Lamberti (Pursh) Greene. (½ Nat.)
Loco Weed.

Lathyrus ochroleucus Hook (½ Nat.)
White Vetch.

Lathyrus palustris L. *Marsh Vetchling.*

Smooth or sparingly hairy, stems angled and winged, slender, 1–3 feet long; stipules half sagittate, lanceolate-linear or ovate-lanceolate, ½ to nearly an inch long. Leaves with branched tendrils and 2–4 pairs of lanceolate oblong or linear, acute, mucronate leaflets; 1½–4 inches long. Flowers purple, half an inch or more long, 2–6 in loose-headed racemes on peduncles about equaling the leaves.

In wet ground and swamps at the lower altitudes throughout the region; flowering during July.

Lathyrus ochroleucus Hook. *Cream-coloured Vetchling.*

Stems slender, somewhat angled, trailing or climbing, smooth and slightly glaucous, 2–2½ feet long, stipules broad foliaceous, half ovate and half cordate, ¾–1 inch long. Leaves with branched tendrils and 3–5 pairs of thin, ovate or broadly oval, obtuse leaflets, 1–2 inches long, green above, whitish beneath. Flowers

yellowish or creamy-white ½–¾ of an inch long, 5–10 on peduncles shorter than the leaves.

On shaded river banks and hillsides at the lower altitudes throughout the Rockies; flowering during June.

Linaceæ

Flax Family

Herbs with perfect regular nearly symmetrical flowers; sepals 5, persistent; petals 5 and alternate with the sepals; stamens 5 opposite the sepals.

Linum Lewisii Pursh. *Lewis's Wild Flax.* Perennial from a woody root, 1–2 feet high, densely tufted, smooth, glaucous. Leaves crowded, oblong or linear, ¼–1½ inches long, acute or acutish, 3–5 nerved. Flowers bright blue, 1–1½ inches broad; petals 5, soon falling; sepals 5, oval, mainly obtuse, ⅓ or ¼ the length

Empetrum nigrum L. (Nat.)
Black Crowberry.

Linum Lewisii Pursh. (¼ Nat.)
Wild Blue-Flax.

of the petals; stigmas shorter than the styles; stamens 5, longer than the styles.

In open, dry, stony ground and slopes throughout the Rockies; flowering in June and July.

Empetraceæ

Crowberry Family

Low evergreen shrubs with narrow nearly sessile leaves jointed to short pulvini, channelled on the lower side by the revolute margins and small monœcious, dioœcious or rarely polygamous flowers; sepals, petals, and stamens each 3, fruit a black, berrylike drupe.

Empetrum nigrum L. *Black Crowberry.*

Smooth or the young shoots hairy, usually much branched, the branches diffusely spreading, 2–10 inches long. Leaves crowded, dark green, linear-oblong, thick and obtuse, about ¼ of an inch long with strongly revolute, roughish margins. Flow-

ers very small, purplish; stamens exserted; berry nearly ¼ of an inch in diameter, black.

Frequent throughout the Rockies in damp woods, especially those of the "Jack Pine" where it frequently forms a considerable part of the forest floor, in dense, close mats,

Celastraceæ

Staff-Tree Family

Shrubs with simple evergreen leaves, and regular perfect flowers, sepals, petals, and stamens each 4 in our species.

Pachystima Myrsinites (Pursh) Raf. *Mountain Lover.*

Low evergreen shrub, densely branched or nearly simple, 1–3 feet high. Leaves opposite, smooth, ovate to oblong or lanceolate, cuneate at the base, the upper half serrate or serrulate ½–1 inch long on very short petioles. Flowers small in axillary cymes; petals 4, stamens 4, inserted at the edge of the broad disc.

Pachystima myrsinites (Pursh) Raf. (½ Nat.)
Mountain Lover.

Viola adunca longipes (Nutt.) Rydb. (⅔ Nat.)
Dog Violet.

In gravelly and stony situations extending from the Valley of the Columbia River at Beavermouth, westward throughout the Selkirks, the minute blossoms appearing in the latter part of May; a pretty but very variable shrub in habit and leaf form.

Aceraceæ

Maple Family

Trees or shrubs with watery often saccharine sap, opposite, simple and palmately lobed leaves and axillary or terminal, cymose or racemose, regular, polygamous or dicœcious flowers; fruit of 2 long-winged samaras, joined at the base.

Acer glabrum Torr. *Smooth Maple.* A shrub or small tree 6–30 feet high, 2–8 inches in diameter, smooth throughout except the scales which are densely soft hairy inside. Leaves round cordate with shallow sinus, 2–4 inches broad and nearly as long, more or less deeply 3-lobed

or parted, the ovate-acuminate lobes doubly serrate with slender teeth; conspicuously veined. Flowers greenish-yellow, somewhat corymbose on short 2-leaved branchlets appearing after the leaves. Fruit smooth with slightly spreading wings about an inch long.

One of the few deciduous trees of the region, growing on slopes with the other forest trees and in the moist valleys.

Hypericaceæ

St. John's-Wort Family

Herbs in our species with opposite, black-dotted leaves, and cymose yellow flowers; sepals and petals 5, twisted in the bud; stamens many.

Hypericum Scouleri Hook. *Scouler's St. John's-wort.*

Simple or sparingly branched above often with numerous small branchlets from running root-stocks, 1–2 feet high. Leaves thin, shorter than the internodes, about an inch long, mostly obtuse, more or less clasping and usually

black-dotted along the margin. Flowers bright orange, ½–1 inch in diameter in more or less panicled cymes, sepals oval or oblong, much shorter than the petals, stamens numerous in three fascicles.

In moist gravelly soil in the Selkirks at Glacier; flowering in July.

Violaceæ

Violet Family

Herbs in our species with basal or alternate simple leaves and solitary or clustered perfect irregular flowers; sepals 5, petals 5, the lower one larger or with a posterior spur.

Viola cognata Greene. *Early Blue Violet.*

Acaulescent; rootstock short and thick. Leaves long-petioled, smooth or more or less hairy, slightly fleshy, cordate with a broad sinus, acute or acuminate, crenately toothed. Flowers large, blue or violet, scapes 2–10 inches long, equalling or surpassing the leaves; petals narrow, ½–¾

of an inch long, all villous at the base, the 3 lower strongly so.

In moist shaded ground, on stream banks and in marshes, frequent throughout the Rockies; flowering in May and early June.

Viola palustris L. *Marsh Violet.*

Acaulescent, smooth, petioles and scapes arising from a very slender, creeping or horizontal rootstock, the scapes mostly exceeding the leaves. Leaves thin, cordate, broadly ovate, orbicular or reniform, 1–2½ inches wide, crenulate. Flowers pale lilac or nearly white with darker veins; petals broad, ⅓–½ an inch long, spur short.

In marshy places among moss in the Selkirks near Glacier; flowering in June; not a common species in the region.

Viola semper-virens Greene. *Low Yellow Violet.*

Sparingly hairy, stems weak and decumbent, multiplying by long slender rootstocks. Leaves mostly basal, rounded, cordate, reniform or sometimes ovate

½–1½ inches broad, finely crenate; peduncles mostly exceeding the leaves. Flowers yellow; petals oblong, ⅓ of an inch or more long, sparingly veined with brown toward the base; spur short and sac-like.

In open woods throughout the region at elevations ranging from 5000 to 7000 feet, blossoming very early in May or June shortly after the melting of the snow.

Viola glabella Nutt. *Tall Yellow Violet.* Minutely hairy or smooth, stems fleshy from a short fleshy horizontal rhizome, naked or sparingly leafy below, 5–12 inches high. Basal leaves on long petioles, the upper short-petioled reniform-cordate to cordate, acute, crenate-toothed, 1–4 inches broad. Flowers bright yellow on peduncles mainly shorter than the leaves; petals broadly oblong, ⅓–½ an inch or more long, the lateral and lower with brown lines at the base.

A striking plant on shaded banks and borders of streams and rills at the higher

altitudes, very abundant in the Selkirks; flowering in June.

Viola canadensis L. *Canada Violet.* Smooth or nearly so; stems 3–14 inches high, tufted, leafy throughout. Leaves broadly ovate or nearly orbicular, cordate, acuminate or acute, 1–2½ inches long, serrate, the veins on the lower surface often hairy. Flowers on peduncles mainly shorter than the leaves, pale violet or nearly white, veined with purple, and often tinged with purple on the outside, ½–¾ of an inch broad; petals nearly in the same plane.

In rich moist woods throughout the Rockies and occasionally in the open alpine meadows, continuing in flower from June until September.

Viola adunca longipes (Nutt.) Rydb. *Dog Violet.* Slightly hairy or nearly smooth, branching from the base, usually 3–11 inches high, at length sending out runners that bear cleistogamic flowers. Leaves ovate, more or less cordate at the base, ½–1½ inches

Eleagnus argentea Pursh. (⅔ Nat.)
Silver-Berry.

Lepargyrea canadensis (L.) Greene. (½ Nat.)
Buffalo-Berry.

long, obscurely crenate. Flowers on peduncles usually longer than the leaves, violet-purple to white; petals ½ an inch or more long; spur ¼ of an inch long, rather slender and curved.

A low-stemmed violet usually with brilliant blue flowers, growing in dry, sandy, shaded or open ground at varying elevations throughout the Rockies: flowering in June and July.

Elæagnaceæ

Oleaster Family

Shrubs or trees mostly silvery-scaly or stellate-pubescent with entire leaves and flowers clustered in the axils or at the nodes of twigs of the preceding season; fruit drupe-like.

Stamens as many as the perianth parts; flowers perfect or polygamous; leaves alternate. **Elæagnus.**

Stamens twice as many as the perianth parts; flowers diœcious; leaves opposite. **Lepargyræa.**

Elæagnus argentea Pursh. *Silver Berry.*

A stoloniferous much branched shrub sometimes 12 feet high, the young twigs covered with brown scurf, becoming silvery.

Leaves oblong-ovate or ovate-lanceolate, densely silvery-scurfy on both sides, acute or obtuse short petioled, 1–4 inches long, Flowers usually numerous in the axils of the leaves, fragrant, silvery, ½ an inch or more long; perianth silvery without, yellowish within, the lobes ovate and short.

On the eastern slope of the Rockies, on the banks of the rivers and streams, very abundant at Banff on the Bow and Spray rivers; flowering in June.

Lepargyræa canadensis (L.) Greene. *Canadian Buffalo-berry.*

A shrub 4–8 feet high, with brown-scurfy young shoots. Leaves with short petioles, ovate or oval, obtuse at the apex, rounded or some of them narrowed at the base, 1–1½ inches long, green and sparingly scurfy, stellate above, densely silvery, stellate, scurfy beneath, some of the scurf usually brown. Flowers small, yellowish, in short spikes at the nodes of the twigs, expanding with or before the leaves; fruit showy,

¼ of an inch in diameter, translucent, varying in colour on different plants from orange to brilliant crimson.

Thickets and wooded banks throughout the Rockies; flowering in May or early June.

Onagraceæ

Evening Primrose Family

Herbs, with alternate or opposite leaves and perfect flowers; calyx tube adnate to the ovary, 2–6 lobed; petals white, yellow, pink, or purple, folded on each other in the bud; stamens usually as many or twice as many as the petals.

Parts of the flower in 4's; seeds with tufts of hair on the ends.

Calyx tube not prolonged beyond the ovary; flowers large. **Chamænerion.**

Calyx tube prolonged beyond the ovary; flowers usually small. **Epilobium.**

Parts of the flowers in 2's; fruit with hooked hairs. **Circæa.**

Chamænerion angustifolium (L.) Scop. *Great Willow-herb, Fireweed.*

Erect, stout, simple or branched, usually smooth, 2–8 feet high. Leaves numerous, alternate, very short petioled, lanceolate, entire or denticulate, 2–6 inches long, ¼-1 inch wide, pale beneath, thin, acute at the apex, the lateral veins confluent in marginal loops. Flowers ¾–1½ inches broad, reddish-purple, in elongated terminal spike-like racemes, 1-2 feet or more long.

An abundant plant throughout the entire region on open mountain sides and banks, especially where visited by fire, flowering throughout the summer, the air being filled with the white cottony seeds a few weeks after flowering commences.

Chamænerion latifolium (L.) Sweet. *Broad-leaved Willow-herb.*

Erect, usually branching, very smooth below, 6–18 inches high. Leaves mostly sessile, 1–2 inches long, ¼–½ an inch wide, denticulate or entire, lanceolate or ovate-lanceolate, acutish at both ends, thick, those of the branches

a Epilobium luteum Pursh. Yellow Willow-Herb. ($\frac{3}{5}$ Nat.)
b Chamænerion latifolium (L.) Sweet. Broad-Leaved Willow-Herb.

opposite, the veins inconspicuous. Flowers reddish-purple, 1–2 inches broad, mainly in short leafy-bracted racemes; petals entire; stigma 4-lobed.

On gravelly river bars and moist clayey banks throughout the entire region; flowering during July.

Epilobium luteum Pursh. *Yellow Willow-herb.*

Stems rather stout, 1–2 feet high, usually simple, nearly smooth. Leaves 1–3 inches long, ovate or elliptical to broadly lanceolate, acute or acuminate, sinuate-toothed, sessile, or when large, obliquely tapering to a winged petiole, slightly fleshy. Inflorescence with more or less glandular pubescence; flowers about $\frac{3}{4}$ of an inch long, not opening widely, pale yellow, rather few, at first nodding in the axils of the upper leaves; style usually exserted and deeply 4-parted.

A rather rare plant in springy places and along alpine brooks, confined to the Selkirks; flowering during July.

Epilobium alpinum L. *Alpine Willow-herb.*

Slender, smooth or nearly so, 3–12 inches high. Leaves pale, petioled, opposite or the upper alternate, obtuse or obtusish at the apex, ½–¾ of an inch long. Flowers few, white, nearly erect, ¼ of an inch or more broad; stigma nearly entire; capsules slender stalked, 1–2 inches long, seeds beaked.

In damp and springy places at the higher altitudes throughout the region; flowering in July.

Epilobium anagallidifolium Lam. *Nodding Willow-herb.*

Low, usually tufted, 2–6 inches high, slender, smooth or nearly so; stems commonly hairy in lines and nodding at the apex. Leaves oblong or narrowly ovate, entire or nearly so, obtuse at the apex, narrowed at the base into a short petiole ½–1 inch long. Flowers few, axillary, clustered at the apex, pink-purple, nodding, about ¼ of an inch broad; stigma entire.

On damp stones and along alpine brooks

Berberis aquifolium Pursh. (¼ Nat.)
Trailing Mahonia.

Chamænerion angustifolium (L.) Scop. (½ Nat.)
Fire-Weed.

at high elevations throughout the region; flowering during midsummer.

Epilobium Hornemanni Reichb. *Hornemann's Willow-herb.*

Erect, 6–12 inches high, simple or nearly so, slightly hairy above, otherwise smooth. Leaves short-petioled, ovate or elliptic, mostly, broadly obtuse at the apex, narrow or rounded at the base, entire or rather remotely denticulate, thin, $\frac{1}{2}$–$1\frac{1}{4}$ inches long. Flowers few in the upper axils, pink-purple or violet, $\frac{1}{4}$ of an inch or more broad; stigma entire.

A frequent and very variable species throughout the region at the higher elevations, along alpine brooks or in damp, partly shaded or springy spots; flowering during June and July.

Circæa alpina L. *Smaller Enchanter's Nightshade.*

Mostly smooth or slightly hairy above, 3–8 inches high. Leaves acute or acuminate at the apex, more or less cordate at the base, coarsely dentate, 1–2 inches long.

Flowers about $\frac{1}{8}$ of an inch broad, white, on pedicels nearly $\frac{1}{4}$ of an inch long, subtended by minute, slender bracts, in a slender raceme; fruit nearly obovoid, about $\frac{1}{8}$ of an inch long, covered with weak hooked hairs.

In moist shaded situations and beside alpine brooks, through the Selkirks; flowering in July.

Circæa pacifica Achers and Magnus. *Western Enchanter's Nightshade.*

Mostly smooth, stems usually simple, 6–12 inches high, from a small tuber. Leaves ovate, rounded or cordate at the base, acute or acuminate, repandly dentate, 1–3 inches long, the slender petiole about the same length. Flowers white, very small in slender racemes, without bracts; fruit about $\frac{1}{8}$ of an inch long loosely covered with soft curved hairs.

Growing oftentimes with the other species in moist shaded situations through the Selkirks; flowering in July.

Araliaceæ

Ginseng Family

Herbs, shrubs or trees with alternate or verticillate leaves, and flowers in umbels, heads or panicles; calyx tube adnate to the ovary; petals usually 5, sometimes cohering together; stamens as many as the petals and alternate with them; seeds flattened, somewhat 3-angled with a coloured, fleshy covering.

Herbs; leaves compound. **Aralia.**
Shrubs; leaves simple. **Echinopanax.**

Aralia nudicaulis L. *Wild Sarsaparilla.* Acaulescent or nearly so, rootstock long. Leaf usually soiltary, arising with the peduncle from a very short stem; petiole erect, 6–12 inches long, primary divisions of the leaf slender, stalked, pinnately 3–5 foliate; leaflets sessile or short stalked, oval or ovate, acuminate, rounded at the base, finely serrate, 2–5 inches long, often hairy on the veins beneath. Flowers on a ped-

uncle usually shorter than the leaves; umbels usually three, nearly round, composed of numerous small greenish flowers.

In rich woods throughout the region, flowering in July.

Echinopanax horridum (Smith) Dec. and Planch. *Devil's Club.*

Very prickly throughout; stems erect from a decumbent base 4–12 feet high, leafy at the top. Leaves roundish, cordate, prickly on both sides, palmately lobed, more or less hairy beneath, 6–24 inches long. Flowers greenish-white in a dense terminal paniculate umbel; petals 5; stamens 5, alternate with the petals; fruit berry-like, laterally compressed, bright scarlet when ripe.

An ornamental though very prickly shrub, in moist rich woods throughout the region, sparingly in the Rockies, west of the divide, but very abundant in the Selkirks where it frequently forms dense impenetrable thickets, flowering in early summer.

Echinopanax horridum (Smith) Dec. & Planch. (½ Nat.)
Devil's Club.

APIACEÆ

Celery Family

Herbs with alternate, compound or simple leaves; flowers small, white, yellow or purple in compound flat heads; fruit dry, usually of two flattened carpels.

Stems 1–2 feet high.
  Leaves pinnately or ternately compound, cut into fine divisions.
    Flowers yellow or white; not purple. **Lomatium.**
    Flowers purple. **Leptotænia.**
  Leaves simple or 3-lobed; flowers yellow. **Zizia.**
Stems 2–3 feet high; leaves ternate. **Ligusticum.**
Stems 4–8 feet high, soft-hairy.
  Leaves ternately divided; flowers white. **Heracleum.**

Lomatium macrocarpum (Nutt.) C. and R. *Large-seeded Parsley.*

Nearly stemless, 4–24 inches high, more or less hairy, much branched at the base from an elongated thick root. Leaves pinnately compound, segments pinnately incised, on rather short petioles, purplish at the base; flowers white or pinkish in a somewhat equally 3–10-rayed umbel; rays 1–4 inches long.

In dry stony ground throughout the Rockies, very abundant on the lower ridges in the vicinity of Banff; flowering in early June.

Lomatum triternatum (Pursh). C. and R. *Narrow-leaved Parsley.*

Purplish at the base, with or without stems, 1–2 feet high, slightly hairy. Leaves twice or thrice ternate, the leaflets narrowly linear, 2–4 inches long. Flowers small, deep yellow in an unequal umbel of 5–18 rays, with slender bracts.

Through the Rockies on dry ridges and grassy slopes; flowering in early June.

Leptotænia multifida Nutt. *Cut-leaved Parsley.*

Stems 1–3 feet high, very leafy at the base, from a large fleshy rootstock. Leaves ternate or thrice pinnate, segments very finely cut. Flowers small, brownish-purple in nearly equal 8–20 rayed, rounded umbels, 3–4 inches in diameter, usually without an involucer.

A most striking plant from its beautifully

dissected leaves and rather large heads of rich brownish-purple flowers blossoming in June; on grassy slopes of Stony Squaw, Banff.

Zizia cordata (Walt.) Koch. *Heart-leaved Alexanders.*

Stout, erect, branched, and smooth or somewhat hairy, 1–2 feet high. Basal and lower leaves long-petioled, broadly ovate or orbicular, undivided, deeply cordate at the base, 1–3 inches long, crenate; stem leaves short-petioled, ternate, the segments ovate or oval, crenate or lobed. Flowers small, bright yellow, in nearly flat 7–16 rayed umbels, 1–2 inches in diameter.

Common on the eastern slopes and foothills of the Rockies; flowering in May and early June.

Ligusticum apiifolium (Nutt.) A. Gray. *Wild Parsley.*

Smooth throughout except the slightly hairy inflorescence and rough leaf margins; stems 2–3 feet high with 1–3 rather small leaves with inflated petioles. Leaves ternately divided, the segments

usually distinct, ovate, deeply cleft into linear acute, sharply serrate or entire lobes. Flowers white in nearly flat, many rayed umbels, 2–3 inches in diameter.

Abundant in wet places and along streams through the Selkirks, especially so in the Asulkan Valley at Glacier; flowering in June and July.

Heracleum lanatum Michx. *Cow-parsnip.*

Very stout, soft hairy, 4–8 feet high, the stems rigid, often 2 inches thick at the base. Leaves petioled, ternately divided, very hairy beneath, the segments broadly ovate or orbicular, cordate, stalked, lobed or sharply serrate, rather thin, 3–6 inches broad; petioles much inflated. Flowers white in 8–30 rayed umbels, 6–12 inches broad, the rays stout, 2–4 inches long.

Common throughout the region in wet places along streams and river banks, frequently growing in great masses; flowering in June and July.

Cornus canadensis intermedia Farr. (½ Nat.)
Bunch-Berry.

Cornaceæ

Dogwood Family

Shrubs or trees with simple, opposite, verticillate or alternate leaves, usually entire; flowers in cymes, heads, or rarely solitary; sepals and petals 4 or 5, stamens as many as the petals or more numerous and inserted with them; fruit a drupe.

Cornus canadensis intermedia Farr. *Dwarf Cornel. Bunch berry.*

Smooth, herbaceous from a nearly horizontal rootstock, woody only at the base; flowering stems, erect, scaly, 5–7 inches high. Leaves verticillate at the summit of the stem or sometimes 1 or 2 pairs of opposite ones below, sessile, oval, ovate or obovate, smooth or minutely appressed, pubescent, acute at each end or sometimes rounded at the base, entire, 1–3 inches long. Flowers small, capitate, purple, surrounded by a white involucre of 4–6 petaloid-ovate bracts, $\frac{1}{3}$–$\frac{3}{4}$ of an inch long; stamens alter-

nate with the petals; styles exserted, deep purple; fruit globose, $\frac{1}{3}$ of an inch in diameter in a close head; bright red.

Common throughout the region in moist woods flowering in early summer.

Cornus stolonifera Michx. *Red-stemmed Dogwood.*

Shrub 3–16 feet high, usually stoloniferous, the twigs smooth and bright reddish-purple or the youngest finely hairy. Leaves slender-petioled, ovate, ovate-lanceolate or oval, acute or short acuminate, rounded or narrowed at the base, finely close-hairy above, white or whitish and sparingly hairy beneath or sometimes smooth on both surfaces, 1–5 inches long. Flowers in flat-topped cymes, 1–2 inches broad, petals white, less than $\frac{1}{4}$ of an inch long; berries white or whitish.

In moist places and along streams and river banks throughout the region; an attractive shrub, sometimes forming thickets of considerable size, the red stems contrasting beautifully with the dark green leaves; flowering in June.

Pyrolaceæ

Wintergreen Family

Low, mostly evergreen perennials with branched rootstocks and petioled leaves; flowers nearly regular, white or pink; calyx 4–5-lobed; corolla deeply 4–5-parted or of 5 petals; stamens twice as many as the divisions of the corolla, anthers opening by pores or short slits; stigma 5-lobed.

Flowers racemose; leaves basal. **Pyrola.**
Flowers solitary or corymbose; leaves opposite or whorled.
Stem leafy at base; flower solitary; style long. **Moneses.**
Stem horizontal; branches erect, leafy; style short. **Chimaphila.**

Pyrola chlorantha Sw. *Greenish-flowered Wintergreen.*

Stems 4–10 inches high, 3–10 flowered. Leaves all basal, small, orbicular or broadly oval, mostly obtuse at both ends, sometimes narrowed at the base, thick, leathery, dull, obscurely crenulate or entire, ½–1 inch long, shorter than or equalling the petioles. Flowers greenish-

white, nodding, slightly odorous, about half an inch broad; stamens and style declined, ascending; anther sacs short-beaked.

On dry wooded slopes throughout the Rockies; flowering during June.

Pyrola uliginosa Torr. *Bog Wintergreen.* Scape 6–12 inches high, 7–15-flowered. Leaves broadly oval or orbicular, dull, rather thick, obscurely crenulate, obtuse at both ends. Flowers frequently over half an inch broad; calyx lobes oblong or ovate-lanceolate, $\frac{1}{4}$–$\frac{1}{3}$ the length of the petals; style and stamens declined; anther sacs beaked.

In bogs throughout the Rockies, a very pretty species with bright rosy flowers and rounded leaves; flowering in July.

Pyrola asarifolia Michx. *Liver-leaf Wintergreen.* Stem 6–15 inches high, 7–15-flowered. Leaves reniform, usually wider than long, thick, shining above, obtuse at the apex, cordate at the base, crenulate, 1–1$\frac{1}{2}$ inches long, usually shorter than

a Pyrola asarifolia Michx. Liver-Leaf Wintergreen.
b Pyrola uliginosa Torr.
c Moneses uniflora (L.) A. Gray. One-Flowered Wintergreen.
(⅔ Nat.)

the narrowly margined petioles. Flowers ½–¾ of an inch broad, pink, nodding in a slender raceme 2–4 inches long; stamens and style declined, ascending; style exserted.

In damp ground, in woods and swamps throughout the Rockies; flowering in July.

Pyrola minor L. *Lesser Wintergreen.* Leaf blades thin, broadly oval or nearly orbicular, dark green, crenulate, obtuse but sometimes with a spine-tipped apex, rounded, slightly narrowed or subcordate at the base ½–1 inch long. Flowers pinkish, ¼ inch broad, nodding, in a close raceme; style straight included, stamens not inclined.

In damp mossy places throughout the region at the higher altitudes; flowering in July.

Pyrola secunda L. *One-sided Wintergreen.* Stems generally several together, from the much branched root-stock, slender, 4–10 inches high. Leaves ovate or often oval, thin, acute or rarely obtuse at the apex, rounded or narrowed at the base, crenulate-serrate,

¾–2 inches long, longer than the petioles. Flowers greenish-white, ¼ of an inch or more broad, many, at first erect but soon drooping, in a dense one-sided raceme; style straight, exserted; stamens not declined.

Common in woods throughout the region at the lower altitudes; flowering during early July.

Moneses uniflora (L.) A. Gray. *One-flowered Wintergreen.*

Stem bearing 1–3 pairs or whorls of leaves at the base, continued above into a bracted or naked scape 2–6 inches high. Leaves orbicular or ovate, obtuse at the apex, narrowed, rounded or sometimes subcordate at the base, rather thin, ¼–1 inch long, longer than or equalling the petioles. Flowers white, ½–¾ of an inch broad, nodding at the summit of the stem; petals spreading; capsule ¼ of an inch in diameter, about as long as the persistent style and lobed stigma; the stamens in pairs opposite each petal.

In mossy spots in the woods throughout the region; flowering in early July.

Chimaphila umbellata (L.) Nutt. (⅔ Nat.)
Prince's Pine.

Arctostaphylos uva-ursi (L.) Spreng. (½ Nat.)
Bear-Berry.

Chimaphila umbellata (L.) Nutt. *Pipsissewa, Prince's Pine.*

Stems extensively creeping, sending up both sterile and flowering branches 3–12 inches high. Leaves numerous, crowded near the summit of the stem, spatulate or cuneate-oblanceolate, obtuse or acutish at the apex, sharply serrate, bright green and shining, 1–2½ inches long, ¼–1 inch wide above the middle. Flowers several in an umbellate head, waxy white or pink, the form of the region being usually bright, rosy pink, ½ an inch or more broad, petals spreading with the rosy pink anthers opposite them in pairs; capsule about ¼ of an inch broad surmounted by the short style.

Locally abundant throughout the region; flowering during July.

Ericaceæ

Heath Family

In our species, shrubs with simple leaves and perfect flowers; calyx free from the

ovary 4–5-parted, mostly persistent; corolla regular, 4–5-toothed, -lobed or -parted; stamens usually as many or twice as many as the corolla lobes; anthers 2-celled, attached to the filaments by the back or base, the sacs, often prolonged upwardly into tubes; ovary 2–5-celled; fruit a capsule, berry or drupe.

Fruit a berry or drupe.
  Calyx becoming large and fleshy. **Gaultheria.**
  Calyx small.
    Leaves thick and leathery; drupe reddish-brown. **Arctostaphylos.**
    Leaves membranous, veiny; drupe scarlet. **Mairania.**

Fruit a dry capsule.
  Anther cells each with a recurved tip. **Cassiope.**
  Anther cells not appendaged.
    Corolla with united petals.
      Bracts firm, persistent; no scaly leaf-buds.
        Leaves heath-like; corolla without pouches. **Phyllodoce.**
        Leaves lanceolate; corolla with pouches. **Kalmia.**
      Bracts thin, deciduous; leaf-buds scaly.
        Corolla funnel-form, 5-lobed. **Azaleastrum.**
        Corolla globose, 4-toothed. **Menziesia.**
    Corolla with distinct petals.
      Flowers white, umbelled; leaves evergreen. **Ledum.**

a Oxycoccus oxycoccus (L.) MacM. Small Cranberry.
b Gaultheria ovatifolia A. Gray. Ovate-Leaved Wintergreen.
c Vitis-idæa vitis-idæa (L.) Britton. Mountain Cranberry.
(¾ Nat.)

Gaultheria ovatifolia A. Gray. *Ovate-leaved Wintergreen*

Depressed, trailing, with ascending branches with rusty hairs. Leaves broadly ovate, ½–1 inch long, serrulate, dark green and shining above, lighter beneath. Flowers pink or nearly white, campanulate, less than ¼ of an inch long, on short solitary pedicels in the axils of the leaves; fruit bright scarlet, ⅓ of an inch in diameter.

A rather rare plant in the region but abundant in places on the slopes of Avalanche Mountain at Glacier.

Gaultheria humifusa (Graham) Rydb. *Low Wintergreen.*

Tufted, creeping or depressed, smooth, the flowering branches 1–5 inches long. Leaves oval or rounded, mostly only ½ an inch long; pedicels solitary in the axils, very short, 3–5 bracteolate. Flowers depressed-campanulate, white or pinkish, little surpassing the calyx; fruit scarlet, ⅓ of an inch in diameter.

Common in alpine meadows through–

out the Rockies and Selkirks; flowering in July.

Arctostaphylos Uva-Ursi (L.) Spreng. *Bear-berry.*

Trailing or spreading on the ground; branches 6–24 inches long, the twigs soft-hairy. Leaves leathery, evergreen, spatulate, obtuse, entire, smooth or minutely hairy toward the base, ½–1 inch long, ⅓ as wide, short-petioled. Flowers ¼ of an inch or less long, ovoid, constricted at the throat, rosy-pink or white, few, in short racemes at the ends of the branches.

In dry sandy or stony soil throughout the Rockies at the lower elevations; flowering in early June.

Mairania alpina (L.) Desv. *Alpine Bear-berry.*

Tufted or depressed-prostrate, branches 2–5 inches high, the twigs smooth or nearly so. Leaves thin, obovate, crenulate, conspicuously reticulate-veined, ½–1 inch long, ⅓ as wide. Flowers few,

appearing before or with the leaves from scaly buds; corolla ¼ of an inch long, white, ovoid, constricted at the throat; berry bright scarlet.

Growing in moss on the wooded slopes throughout the Rockies, flowering in May and early June.

Cassiope Mertensiana (Bong.) Don. *White Heath.*

Rather stout with rigid, ascending, woody, much branched stems, a foot or less high. Leaves ½ an inch long, smooth, not furrowed on the back, closely crowded in 4-ranks. Flowers pure white, nodding, campanulate, ¼ of an inch long with 5 deeply cut obtuse spreading lobes, on smooth peduncles half an inch or less long, near the tips of the apparently 4-sided stems; calyx smooth, usually red, making the bell-like flowers appear red and white.

Throughout the region at the higher elevations, frequently carpeting the ground; flowering in late June and early July.

Phyllodoce glanduliflora (Hook.) Coville. *White False-heather.*

Stems rather rigid, much branched, 3–12 inches high. Leaves numerous and crowded but spreading, linear, oblong, obtuse, ¼–½ an inch long, thick, leathery with a white line through the centre below and deeply furrowed above, the margins thick and rough. Flowers ovoid, glandular throughout, less than ¼ of an inch long, much contracted at the throat, short-lobed, on glandular pedicels ½–1 inch long at the ends of the branches.

In alpine meadows and woods at the higher elevations throughout the region; flowering during June and early July, often in clumps of considerable size.

Phyllodoce intermedia (Hook.) Rydb. *Pink False-heather.*

Much branched, from a more or less decumbent base, 6–12 inches high. Leaves linear, ¼–½ an inch long, obtuse, leathery, with thickened revolute, slightly glandular-toothed margins. Flowers pale pink,

a Phyllodoce empetriformis (Smith) Don.
Red False-Heather.

b Phyllodoce glanduliflora (Hook.) Rydb.
White False-Heather.

c Cassiope Mertensiana (Bong.) Don. (¾ Nat.)

$\frac{1}{4}$ of an inch long, urn-shaped, slightly contracted at the throat, with 5 spreading lobes; at the ends of the branches on glandular pedicels $\frac{1}{2}$–1 inch long; calyx slightly glandular; corolla smooth; slightly fragrant.

Throughout the region growing in the same situations as the other heathers, and often associated with them, perhaps a hybrid; flowering in late June and through July.

Phyllodoce empetriformis (Smith) D. Don. *Red False-heather.*

Much branched from the base, 6–12 inches high. Leaves linear, obtuse, $\frac{1}{4}$–$\frac{1}{2}$ an inch long, with strongly revolute, thick rough margins. Flowers $\frac{1}{4}$ of an inch long, bright rose-colour, campanulate, with broad, spreading obtuse lobes, very fragrant, on slender, slightly glandular pedicels $\frac{1}{2}$–1 inch long at the ends of the stems; calyx and corolla smooth.

Abundant throughout the region at the higher elevations, in the same situations as the two previous species and flowering with them during late June and early July.

Kalmia microphylla (Hook.) Heller. *Small-leaved Swamp Laurel.*

A smooth shrub, 2–6 inches high with erect or ascending branches, the twigs 2-edged. Leaves opposite, short petioled, less than ½ an inch long, oblong or ovate, obtuse, narrowed at the base, the margins revolute. Flowers on slender pedicels 1–1½ inches long, few in simple umbels terminating the branches; corolla saucer-shaped, bright rosy pink about ½ an inch in diameter.

Frequent in mossy alpine bogs and meadows throughout the region at the higher altitudes; flowering during June and early July.

Azaleastrum albiflorum (Hook.) Rydb. *White Rhododendron.*

A shrub with stems 2–6 feet high, with slender hairy branches more or less glandular when young, nearly smooth with age. Leaves thin, light green and shining above, paler beneath, oblong, 1–2 inches long, with slightly wavy margins. Flowers white,

Ledum grœnlandicum Œder. (⅔ Nat.)
Labrador Tea.

Azaleastrum albiflorum (Hook.) Rydb. (½ Nat.)
White Mountain-Rhododendron.

nearly an inch broad, open, with 5-spreading lobes; on short nodding stems in numerous clusters of 1–3 near the ends of the branches, on wood of the previous year; sepals nearly ½ an inch long and leaflike, filaments bearded at the base; stigma peltate, 5-lobed.

On the wooded hillsides at the higher elevations through the Rockies, but much lower in the Selkirks; flowering in June and July.

Menziesia ferruginea Smith. *Smooth Menziesia.*

A shrub 2–6 feet high, twigs more or less chaffy. Leaves obovate, obtuse and glandular-tipped at the apex, pale, glaucous and smooth or very nearly so beneath, sparingly hairy above, ¾–1½ inches long, the margins ciliolate. Flowers 1–5 on glandular pedicels ½–1 inch long in spreading umbels, becoming erect, corolla ¼ of an inch long, cream and pink or salmon, urn-shaped, with 4 spreading teeth; stamens 8, included, with hairy filaments.

Throughout the region in moist woods and slopes; flowering during June.

Ledum Grœnlandicum Oeder. *Labrador Tea.*

A shrub 1–4 feet high, with twigs densely rusty woolly. Leaves oblong, obtuse, 1–2 inches long, $\frac{1}{4}$–$\frac{1}{2}$ an inch wide, green and deeply veined above, densely brown woolly beneath, the margins strongly revolute. Flowers numerous, white, nearly $\frac{1}{2}$ an inch broad in close umbels or corymbs; petals 5, narrow, spreading.

Abundant throughout the region at the lower altitudes in bogs and swamps; flowering during June.

Vacciniaceæ

Huckleberry Family

Shrubs or small trees with alternate leaves and small perfect flowers; calyx tube adnate to the ovary, 4–5-lobed or cleft; corolla 4–5-lobed, rarely divided into single petals, deciduous; stamens twice as many as the

Menziesia ferruginea Smith. (½ Nat.)
Menziesia.

Kalmia microphylla (Hook.) Heller. (⅔ Nat.)
Dwarf Swamp-Laurel.

corolla lobes, inserted at the base; filaments mostly short; anthers attached on the back 2-celled; fruit a globose berry or drupe.

Erect deciduous shrubs; corolla cylindric or urn-shaped, white, pink or greenish. **Vaccinium.**
Low evergreen shrub; corolla open-campanulate, pink; berry red. **Vitis-Idæa.**
Trailing or creeping evergreen shrubs.
Corolla short-campanulate, white; berry white. **Chiogenes.**
Corolla with spreading curved petals, pink; berry red. **Oxycoccus.**

Vaccinium cæspitosum Michx. *Dwarf Bilberry.*

A shrub 3–7 inches high, much branched and nearly smooth throughout. Leaves obovate or oblong, cuneate, obtuse or acute, green and shining on both sides, nearly sessile, serrulate, with close bluntish teeth. Flowers white or pink, small bell-shaped, $\frac{1}{8}$ of an inch long, mostly solitary in the axils and longer than their drooping pedicels; berry $\frac{1}{4}$ of an inch or more in diameter, blue with a bloom.

On slopes and in alpine meadows throughout the Rockies at the higher altitudes;

flowers appearing with the leaves in early June.

Vaccinium erythrococcum Rydb. *Alpine Bilberry.*

Stems erect with numerous slender, strict, green branches and branchlets, 3–18 inches high. Leaves ovate or oval, ½ an inch long or less, bright green. Flowers ovate, ⅛ of an inch long, white or pink, 5-lobed, solitary in the axils of the leaves; berries small, bright red.

On slopes and in alpine meadows throughout the Rockies at the higher altitudes; flowering during June.

Vaccinium ovalifolium Smith. *Blueberry.*

A straggling branched shrub, 3–12 feet high, the branches slender, twigs smooth, joints sharply angled. Leaves oval, short-petioled, smooth on both sides, green above, pale and glaucous beneath, rounded at both ends or somewhat narrowed at the base, thin, sometimes spine tipped, entire or nearly so, 1–2 inches long. Flowers commonly solitary in the axils on rather

Vaccinium erythrococcum Rydb. (⅔ Nat.)
Alpine Bilberry.

Vaccinium ovalifolium Smith. Blueberry. (½ Nat.)
Vaccinium globulare Rydb. Thin-Leaved Bilberry.

recurved pedicels; corolla pink or white, ovoid, $\frac{1}{4}$ of an inch or more long; berries blue with a bloom $\frac{1}{2}$ an inch in diameter.

In the beds of snow slides, occasionally in the Rockies, and abundant through the Selkirks, where it is also found in the woods; flowering in May.

Vaccinium globulare Rydb. *Thin-leaved Bilberry.*

A branching shrub 1–3 feet high, nearly smooth throughout, stems round, only the youngest twigs slightly angled, bark grey and somewhat shreddy. Leaves broadly oval or obovate, obtuse to acute, somewhat pale beneath, veiny, sharply and finely serrate, $\frac{1}{2}$–$1\frac{1}{2}$ inches long. Flowers on pedicels $\frac{1}{2}$ an inch long; calyx teeth almost obsolete; corolla depressed-globose, frequently more than $\frac{1}{4}$ of an inch in diameter, greenish-white; berry dark purple, $\frac{1}{4}$ of an inch in diameter.

In beds of snow slides and in woods in the valleys of the Selkirks; flowering during June.

Vitis-idæa Vitis-idæa (L.) Britton. *Mountain Cranberry.*

A low evergreen shrub with creeping stems, the branches erect, 3–8 inches high, nearly smooth. Leaves thick and leathery, crowded, green and shining above, paler and black-dotted beneath, ovate or oval, short-petioled and entire or sparingly serrulate $\frac{1}{4}$–$\frac{3}{4}$ of an inch long, the margins revolute. Flowers in short terminal 1-sided racemes or clusters, nodding, longer than their pedicels; corolla white or pink nearly $\frac{1}{8}$ of an inch long, open campanulate, 4-lobed; berries dark red, acid, nearly $\frac{1}{2}$ an inch in diameter.

In bogs and moist mossy places throughout the Rockies; flowering during June.

Chiogenes hispidula (L.) T. and G. *Creeping Snowberry.*

Creeping, branches rough hairy, slender, 3–12 inches long. Leaves leathery, persistent, oval, ovate or slightly obovate, acute at the apex, rounded or narrowed at the base, dark green and smooth above, sprinkled with stiff, brown hairs be-

neath and on the revolute, entire margins; ¼ to nearly ½ an inch long. Flowers white, ovoid, about ⅛ of an inch long, few, solitary in the axils, nodding, on the lower side of the creeping stems; berry about ¼ of an inch in diameter, white, bristly, aromatic.

Throughout the Rockies at the lower elevations, growing in moss and on damp, decaying logs; flowering in May.

Oxycoccus Oxycoccus (L.) MacM. *Small Cranberry.* Stems slender, creeping and rooting at the nodes, 6–18 inches long; branches ascending or erect 1–6 inches high. Leaves thick, evergreen, ovate, entire, acutish at the apex, rounded or cordate at the base, dark green above, white beneath, ⅛ of an inch or less long, ½ as wide, the margins revolute. Flowers 1–6, from terminal scaly buds, nodding on slender erect pedicels; corolla pink, ⅓ of an inch broad, the petals curled backwards; stamens and style protruding; berry globose, ¼ of an inch or more in diameter, acid, often spotted when young.

In sphagnum bogs throughout the Rockies, though not common; flowering during July.

Primulaceæ

Primrose Family

Herbs with perfect regular flowers; calyx free from the ovary, usually 5-parted; corolla 5-cleft; stamens as many as the corolla lobes and opposite to them; flowers purple, yellow or white.

Lobes of the corolla erect or spreading.
  Leaves in a rosette at the base of the scape.
    Corolla-tube longer than the calyx; flowers pink. **Primula.**
    Corolla-tube shorter than the calyx; flowers white or yellow. **Androsace.**
  Leaves whorled at the top of the stem; flowers white. **Trientalis.**
Lobes of the corolla reflexed. **Dodecatheon.**

Primula americana Rydb. *Bird's-eye Primrose.*

Leaves spatulate or oblong, obtuse at the apex, narrowed or somewhat wedge-shaped at the base, tapering into petioles, green, usually white-mealy be-

neath, at least when young; 1–4 inches long, the margins crenulate-dentate. Flowers umbellate 3–20, on scapes 4–18 inches high; corolla pink or lilac, usually with a yellowish eye, the tube slightly longer than the calyx, the lobes wedge-shaped, notched at the apex, $\frac{1}{4}$ of an inch or more long.

In swamps and wet meadows in the lower valleys of the eastern slopes of the Rockies not penetrating far into the mountains; flowering in June.

Primula Maccalliana Wiegand. *Maccalla's Primrose.* Similar to the preceding species but much smaller. Leaves spatulate or obovate, mostly quite broad; pale green above, more or less mealy beneath, denticulate or repand, obtuse at the apex, narrowed or cuneate at the base, petioled or sessile, $\frac{1}{2}$–$1\frac{1}{2}$ inches long, forming a rosette at the base of the scape. Flowers $\frac{3}{8}$ of an inch broad or less, umbellate, on a peduncle 1–6 inches high; pale pink or bluish with a conspicuous orange eye; the lobes obcordate;

corolla tube yellow, slightly longer than the calyx.

The commonest primrose of the region on wet banks and moist, sandy or gravelly places at the lower altitudes throughout the Rockies; flowering in June, also occurs sparingly in the Selkirks.

Androsace carinata Torr. *Sweet Flowered Androsace.* Proliferously branched at the base and cæspitose. Leaves folded over each other, forming rosettes at the bases of the many flowered scapes; from lanceolate to oblong-spatulate or ovate, keeled, 1-nerved, $\frac{1}{4}$–$\frac{1}{2}$ an inch long, acute, fringed with hairs on the margins. Flowers $\frac{1}{4}$ of an inch or more broad, cream coloured with a brilliant yellow eye; 4–10 in a close umbel, on slender hairy scapes 1–3 inches high; flowers delicately fragrant.

Throughout the Rockies in open situations either dry or moist, and at low or high altitudes; flowering from early June to midsummer according to the altitude.

Primula Maccalliana Wiegand. (⅔ Nat.)
MacCalla's Primrose.

Androsace carinata Torr. (⅔ Nat.)
Sweet Androsace.

Androsace septentrionalis L. *Alpine Androsace.* Almost smooth, leaves lanceolate or oblong-lanceolate, narrowed at the base, from irregularly denticulate to laciniate toothed. Flowers small, little more than $\frac{1}{8}$ of an inch broad, white with yellow centre, in spreading umbels; peduncles 2–10 inches high.

In open places and on grassy banks at the lower altitudes throughout the Rockies; flowering in May and early June.

Androsace diffusa Small. *Spreading Androsace.* More or less hairy. Leaves rosulate, oblanceolate to spatulate or nearly linear, $\frac{1}{2}$–$1\frac{1}{2}$ inches long, obtuse or acute, sharply serrate above the middle or sparingly toothed. Scapes erect and spreading, often diffusely branched at the base, 2–4 inches long; pedicels thread-like from $\frac{1}{2}$–3 inches long in the same umbel. Flowers white or pink, the corolla included or sometimes equalling the tips of the calyx segments.

On grassy banks and slopes in the Rockies flowering in June.

Trientalis arctica Fisch. *Arctic Star-flower.*

Stems slender, 1–4 inches high, with small scattered obovate leaves below; upper leaves obovate-lanceolate to lanceolate, obtuse, 1–1½ inches long. Flowers white on slender pedicels as long as the leaves; calyx reddish with 7 narrowly linear acute sepals; petals 7 white, lanceolate, acute, about twice the length of the sepals; stamens 7.

In moist woods throughout the region, rare in the Rockies but common throughout the Selkirks; flowering in June.

Dodecatheon pauciflorum (Durand) Greene. *Slender Shooting Star.*

Smooth. Leaves dark green, lanceolate, acute, entire, 2–3 inches long. Flowers few in an umbel; scape 6–8 inches tall; segments of the corolla rich lilac purple, the undivided part yellow with a narrow scalloped

Trientalis arctica Fisch. (⅔ Nat.)
Arctic Star-Flower.

Dodecatheon conjugens Greene. (½ Nat.)
Shooting-Star.

ring, midway between the base of the segments and the stamen tube; stamen tube often nearly as long as the anthers, yellow; anthers purple.

In damp, open ground and grassy slopes throughout the eastern Rockies; flowering in June.

Dodecatheon conjugens Greene. *Shooting-star.* Plant smooth. Leaves obovoid and elliptic, 2–5 inches long, including the distinct petiole, obtuse, entire. Flowers large, in a few-flowered umbel, scape 3–8 inches high; corolla deep purple varying to rose-red; anthers, distinct, obtuse, the connective lanceolate, acuminate to a linear point.

In the open ground and plains in the lower Valleys of the Rockies; flowering in June.

Gentianaceæ

Gentian Family

Smooth herbs with opposite entire leaves, and regular perfect flowers in clusters or

solitary at the ends of the stems or branches. Calyx 4–12-lobed; corolla 4–12-parted; stamens as many as the lobes of the corolla and alternate with them.

Corolla funnel-form or campanulate; without glands, spurs or scales. **Gentiana.**

Corolla campanulate; spurred at the base. **Tetragonanthus.**

Gentiana acuta Michx. *Northern Gentian.* Stem leafy, slightly angled, simple or branched, 6–20 inches high. Basal and lower leaves spatulate or obovate, obtuse, the upper lanceolate, acuminate, rounded or subcordate at the base, sessile or somewhat clasping, ½–2 inches long. Flowers numerous in clusters in the axils of the upper leaves; pedicels ½–1 inch long, leafy bracted at the base; calyx deeply 5-parted, lobes lanceolate; corolla tubular campanulate, ½ an inch long, 5-parted, pale blue or greenish; lobes lanceolate, acute each with a fimbriate crown at the base.

Along stream banks and grassy slopes throughout the Rockies, common; flowering in July.

Gentiana propinqua Richards. *Four-parted Gentian.*

Stems slender, usually much branched from the base and sometimes also above, slightly wing-angled, 2–7 inches long. Basal leaves spatulate obtuse, the upper distant, oblong or lanceolate, ½–1 inch long, acute or obtusish at the apex, rounded at the slightly clasping base, obscurely 3-nerved. Flowers sometimes numerous, solitary on slender peduncles, mostly 4-parted, ½–¾ of an inch high, seldom opening; calyx 4-cleft, two of the lobes oblong, the others linear lanceolate; corolla blue or bluish, glandular within at the base, the lobes ovate-lanceolate, entire or denticulate.

Frequent throughout the Rockies on slopes and open ground beside the trails; flowering through July.

Gentiana prostrata Haenke. *Dwarf Gentian.*

Stems slender, 1–5 inches long, when prostrate the lateral ones often creeping. Leaves ovate, rather spreading, bright green with slightly whitened edges.

Flowers solitary, 4-parted, azure blue, ½ an inch high, the lobes rather spreading.

A very small and rather rare plant found throughout the Rockies at the higher altitudes, on the alpine slopes and summits; flowering in July.

Gentiana glauca *Pale-glaucous Gentian.*

Perennial; stems 2–4 inches high. Leaves oval, glaucous, ¼–½ an inch long, obtuse, the basal forming a rosette. Flowers few or several at the top of the stem, short-peduncled or nearly sessile, usually subtended by a pair of bracts; calyx campanulate, the teeth shorter than the tube; corolla blue or blue-green, ½ an inch or more long, the tube cylindrical with short ovate obtuse lobes.

In wet alpine meadows and slopes throughout the region, a rather rare but very striking little gentian, flowering in July.

Gentiana affinis Griseb. *Large Gentian.*

Stems clustered, 6–12 inches high, mostly ascending. Leaves from oblong or lanceolate to linear. Flowers from numerous

Gentiana affinis Griseb. (⅔ Nat.)
Large Gentian.

Romanzoffia sitchensis Bong. (⅔ Nat.)
Romanzoffia.

and racemose to few and almost solitary; calyx lobes linear or linear-awl-shaped, unequal, the largest rarely equalling the tube; corolla an inch or less long, bright blue or bluish; funnel-form, spotted inside with white, the lobes ovate, acute, and spreading.

A showy species in damp open meadows in the lower valleys throughout the Rockies, especially abundant at Banff; flowering during August.

Tetragonanthus deflexus (J. E. Smith) Kuntze. *Spurred Gentian.*

Annual, stems simple or branched, slender, erect, 6–20 inches high. Basal leaves obovate or spatulate, obtuse, narrowed into petioles; stem leaves ovate or lanceolate, acute, sessile, 3–5-nerved, 1–2 inches long, the uppermost smaller. Flowers $\frac{1}{4}$ of an inch or more long, few, on peduncles about their own length, in the axils of the upper leaves; corolla purplish-green or white, 4–5-parted, the lobes ovate, acute, each

with a hollow deflexed or descending spur about half the length of the corolla.

In moist places and shaded slopes throughout the Rockies; a rather frequent but inconspicuous plant owing to its green colour; flowering in July.

Menyanthaceæ

Buckbean Family

In our species a smooth marsh herb, with creeping rootstock, long-petioled, 3-foliate leaves and white or purplish flowers, in racemes on long lateral scapes.

Menyanthes trifoliata L. *Buckbean.* Creeping rootstocks sometimes a foot long marked by the scars of bases of former petioles. Leaves 3-foliate, petioles sheathing at the base, 2–10 inches long; leaflets oblong or obovate, entire, obtuse at the apex, narrowed to the sessile base, $1\frac{1}{2}$–3 inches long. Flowers half an inch long, pure white or purplish in 10–20-flowered racemes on

scape-like naked peduncles; calyx shorter than the corolla which is bearded with white hairs within, giving the flower a feathery appearance.

In open marshes throughout the region, local in distribution; flowering in May and early June.

Apocynaceæ

Dogbane Family

In our species, perennial herbs with opposite, entire leaves and small, 5-parted, campanulate, pink flowers in corymbed cymes, and slender elongated terete seed pods.

Apocynum androsæmifolium L. *Spreading Dogbane, Honeybloom.*

Stems 1–3 feet high, branches broadly spreading, mostly smooth. Leaves ovate or oval, spine tipped, smooth above, pale and usually more or less hairy beneath, 2–4 inches long. Flowers pink, open campanulate, ⅜ of an inch

broad, with 5 spreading lobes, numerous, in loose, terminal and axillary cymes; seed pods round, slender, curved, 4–6 inches long, narrowed at the apex, usually in pairs; plant with a milky juice.

Frequent on the line of the railway from Field westward through the valley of the Kicking Horse River.

Hydrophyllaceæ

Water-Leaf Family

Herbs, mostly rough-hairy, with alternate or basal leaves, and perfect regular 5-parted flowers in cymes, spikes or racemes, curled when in bud and uncoiling as they flower; stamens 5, inserted on the corolla and alternate with its lobes; filaments thread-like; flowers yellow, purple or white.

Plant rough-hairy; leaves lanceolate and simple or pinnate; flowers blue or violet-purple. **Phacelia.**
Plant smooth; leaves round reniform or cordate; flowers white. **Romanzoffia.**

Phacelia sericea (Graham) A. Gray. (⅓ Nat.)
Mountain Phacelia.

Phacelia heterophylla Pursh. (⅓ Nat.)

Phacelia heterophylla Pursh. Rough-hairy; stem stout, 6–24 inches high. Leaves white hairy, lanceolate to ovate, acute, pinnately and obliquely, striately veined, the lower tapering into petioles, commonly with 1–2 pairs of small lateral leaflets. Flowers in a dense spike; corolla bluish, longer than the oblong-lanceolate or linear calyx lobes; filaments much exserted, sparingly bearded.

In the Cougar Valley in the Selkirks; flowering in July.

Phacelia sericea (Graham) A. Gray. *Mountain Phacelia.* Silky-hairy or canescent throughout, 6–18 inches high, leafy to the top. Leaves pinnately parted into linear or narrow oblong, numerous, often pinnatifid divisions, the lower petioled, the upper nearly sessile. Flowers crowded in an elongated spike, corolla violet, blue or white, open-campanulate, cleft to the middle; stamens much exserted.

In dry ground and open slopes throughout the region; flowering in June and July.

Romanzoffia sitchensis Bong. *Romanzoffia.*

Stems slender, weak, 3–6 inches long. Leaves mainly at the root, with slender petioles, alternate, round-cordate, or reniform, with 7–11 crenate, glandular-tipped lobes. Flowers more or less racemose on slender, weak scapes with spreading pedicels longer than the flowers; calyx lobes smooth, much shorter than the delicately veiny pale pink or usually white funnel-form corolla with yellow throat and broad rounded lobes.

On constantly dripping ledges of wet rocks, rare in the region generally but rather frequent about Lake Louise and Lake O'Hara; flowering during July.

Boraginaceæ

Borage Family

Herbs with alternate or rarely opposite, entire, leaves and usually rough hairy stems. Flowers perfect, regular, mostly blue, in

1-sided curled spikes; corolla 5-lobed, stamens as many as the corolla lobes and alternate with them; fruit mostly of 4 1-seeded nutlets.

Nutlets armed with barbed prickles. **Lappula.**
Nutlets not armed with barbed prickles.
Racemes without bracts; corolla flat, round. **Myosotis.**
Racemes with bracts; corolla funnel form. **Lithospermum.**

Lappula floribunda (Lehm.) Greene. *False Forget-me-not.*

Rough hairy, stem stout, paniculately branched, 2–5 feet high, the branches nearly erect. Leaves oblong, oblong-lanceolate or linear-lanceolate, 2–4 inches long, sessile, obtuse or acute at the apex, the lower narrowed into long petioles. Flowers 5-lobed, bright blue with a yellow centre $\frac{1}{8}$ to nearly $\frac{1}{3}$ of an inch broad in numerous erect, dense racemes, nutlets $\frac{1}{6}$ of an inch long, keeled tuberculate on the back, the margins armed with a single row of flat barbed prickles, on pedicels less than their own length.

In moist, open ground, frequent throughout the Rockies; a striking plant with heads of bright blue flowers, resembling large forget-me-nots flowering in June.

Lappula diffusa (Lehm.) Greene. *False Forget-me-not.*

Similar to the preceding species, but not so tall and with broader acute leaves. Flowers larger, ½ an inch broad, not so numerous; and larger, more densely prickled nutlets, ¼ of an inch long, on pedicels more than their own length.

Throughout the Rockies, probably more common than the previous species, in moist, more or less shaded or open ground; flowering in June.

Lappula Lappula (L.) Karst. *Stickseed.*

Pale, leafy, rough, 1–2 feet high, the branches erect. Leaves linear and linear-oblong, sessile or the lowest spatulate and narrowed into petioles ½–1½ inches long, obtuse. Flowers very small, about the length

a Lappula floribunda (Lehm.) Greene.
False Forget-me-not.

b Lithospermum linearifolium Goldie. (⅔ Nat.)
Narrow-Leaved Puccoon.

of the calyx, blue, in one-sided leafy-bracted racemes; nutlets papillose on the back, armed with 2 rows of slender barbed prickles.

In open or waste ground throughout the region, especially on or near the railway; flowering throughout the summer.

Myosotis alpestris Schmidt. *Forget-me-not.* Stems tufted, erect, 3–9 inches high. Leaves oblong, linear, or lanceolate, hairy, 1–2 inches long. Flowers in rather dense heads; corolla flat, bright blue with a yellow centre $\frac{1}{4}$ of an inch or more broad, 5-lobed.

Frequent throughout the Rockies in alpine meadows and on grassy slopes; flowering during June and early July.

Lithospermum linearifolium Goldie. *Narrow-leaved Puccoon.* Erect or diffusely branched from the base, 6–12 inches high, minutely rough-hairy. Leaves all linear, sessile, acute, 1–2 inches long. Flowers of two kinds, leafy-bracted, at the ends of the branches, the earlier bright yellow, $\frac{1}{2}$ an

inch broad with a tube an inch or more long, the rounded lobes crenately erose; the later flowers small, inconspicuous and pale.

Dry sandy soil in the valley of the Bow River at Banff, the showy flowers in May and early June.

Menthaceæ

Mint Family

Aromatic herbs mostly with 4-sided stems and simple opposite leaves; flowers irregular, perfect, clustered, the inflorescence typically cymose; calyx persistent, 5-toothed or lobed; corolla with a short or long tube, the limb 4–5-lobed, mostly 2-lipped, but some regular; stamens borne on the corolla tube, typically 4.

Calyx with a protuberance on the upper side.
Corolla 2-lipped, the upper arched, tube long, blue. **Scutellaria.**
Calyx without a protuberance on the upper side.
Corolla tube longer than the calyx; flower 2-lipped purple. **Prunella.**

Corolla tube not longer than the calyx; flower 2-lipped, pink. **Stachys**
Corolla tube shorter than the calyx; nearly regular, 4-lobed. **Mentha.**

Scutellaria galericulata L. *Marsh Skullcap.* Perennial by slender stolons, leafy; stem erect, usually branched, 1–2 feet high. Leaves oblong-lanceolate to ovate-oblong, thin, short petioled or the upper sessile, acute at the apex, dentate with low teeth or the upper entire, subcordate or rounded at the base, 1–2½ inches long, the uppermost usually much smaller. Flowers an inch long, bright blue with a slender tube and slightly enlarged throat, solitary in the axils of the leaves, on peduncles shorter than the calyx.

In swamps and wet places, frequent along the railway from Field west to Beavermouth.

Prunella vulgaris L. *Heal-all, Self-heal.* Hairy or nearly smooth; stems slender, creeping or ascending, or erect, usually simple but sometimes considerably branched, 2 inches to 2 feet high. Leaves ovate, oblong

or oblong-lanceolate, obtuse or subacute at the apex, usually narrowed at the base, thin, entire or crenate, 1–4 inches long. Flowers in dense terminal spikes ½–1 inch long, becoming 2–4 inches in fruit; corolla violet-purple, or sometimes pink or white, ¼–½ an inch long, twice as long as the purplish-green calyx.

Common throughout the region in moist, open or shaded places at the lower altitudes, frequently forming clumps of considerable size; flowering throughout the summer.

Stachys palustris L. *Marsh Wound-wort.*

Erect, usually slender, simple or somewhat branched, hairy throughout; 1–4 feet high. Leaves lanceolate, sessile or very short petioled, acuminate or acute at the apex, wedge-shaped or cordate at the base, 2–5 inches long, ½–1 inch wide, crenulate or dentate, flowers clustered, forming an elongated, interrupted spike, or sometimes in the axils of the upper leaves, 6–10 in a whorl; calyx hairy, its slender

teeth more than $\frac{1}{2}$ the length of the tube; corolla deep pink spotted with purple, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, the upper lip erect, hairy, the lower spreading 3-cleft.

In swamps and wet places throughout the region from Field west to Beavermouth along the railway; flowering during July.

Mentha canadensis L. *American Wild Mint.* Perennial by runners; stem more or less hairy with spreading hairs, simple or branched, 6 inches to $2\frac{1}{2}$ feet high. Leaves oblong, ovate-oblong or oblong-lanceolate, slender-stemmed, acute at the apex, sharply serrate, smooth or sparingly hairy, the larger 2–3 inches long, $\frac{1}{2}$–1 inch wide. Flowers numerous, small, $\frac{1}{8}$ of an inch long, white, pink or pale purple, all in whorls in the axils of the leaves, the calyx about $\frac{1}{3}$ the length of the corolla.

In moist soil and marshy places, frequent along the line of the railway from Field west to Beavermouth; flowering during July.

Scrophulariaceæ

Figwort Family

Herbs with alternate or opposite leaves without stipules and mostly perfect, complete and irregular flowers; calyx 4–5-toothed, -cleft, or -divided; corolla 2-lipped or nearly regular and stamens 2, 4, or 5, nearly equal.

Stamens 5, the fifth sterile or rudimentary.
  Sterile stamen represented by a gland on the upper side of the corolla tube. **Collinsia.**
  Sterile stamen nearly as long as the rest. **Pentstemon.**
Stamens 2, leaves opposite or whorled. **Veronica.**
Stamens 4.
  Stamens not enclosed in the upper lip. **Mimulus.**
  Stamens enclosed in the upper lip.
    Anther cells unequal.
      Upper lip of the corolla much longer than the lower. **Castilleja.**
      Upper lip of the corolla scarcely longer and much narrower than the inflated lower one. **Orthocarpus.**
    Anther cells equal and parallel.
      Galea not prolonged into a beak; throat without teeth. **Pedicularis.**
      Galea prolonged into a very slender, recurved beak; throat with a tooth on each side **Elephantella.**

Collinsia parviflora Dougl. (⅔ Nat.)
Small-Flowered Collinsia.

Elephantella grœnlandica (Retz.) Rydb. (⅓ Nat.)
Long-Beaked Elephantella.

Collinsia parviflora Dougl. *Small-flowered Collinsia.* Stems slightly hairy at length, diffusely branched, very slender, 3–15 inches long. Leaves oblong or lanceolate, mostly obtuse at the apex, narrowed at the base, ½–1 inch long, entire or sparingly toothed, the lower opposite, petioled; the floral sessile, opposite or verticillate. Flowers few, in whorls in the axils of the leaves, on long slender pedicels; corolla blue or whitish, the throat longer than the limb; the upper lip erect, 2-cleft, the lower lip 3-lobed, spreading.

An inconspicuous little plant on rocks and in damp places throughout the region; flowering during June and July.

Pentstemon fruticosus (Pursh.) Greene. *Large Purple Beard-tongue.* Decumbent, diffusely spreading, 6–12 inches high, woody at the base. Leaves ovate, obovate or oblong, ½ an inch or more long, serrulate or entire, smooth or hairy when young. Flowers in glandular hairy terminal racemes; corolla violet, blue or pinkish purple,

an inch or more long, tubular funnel-form, 2-lipped, the upper deeply 2-, the lower 3-cleft.

Throughout the region in exposed stony places and on slides up to an elevation of 10,000 feet, frequently growing in patches of considerable size; flowering in June and early July.

Pentstemon confertus Dougl. *Yellow Beard-tongue.*

Smooth throughout or the inflorescence and calyx sometimes with viscid hairs; stem a foot or two high. Leaves from oblong or oblong-lanceolate to somewhat linear, usually quite entire. Flowers in a terminal head of 2–5 dense, many-flowered clusters; corolla with a narrow tube about ½ an inch long, pale yellow; the lower lip conspicuously bearded within.

In moist or dry open ground throughout the Rockies, especially abundant in the valleys of the Bow and Pipestone in the

Pentstemon confertus Dougl. (⅓ Nat.)
Yellow Beard-Tongue.

Pentstemon pseudohumilis Rydb. (½ Nat.)

region about Laggan; flowering during late June and early July.

Pentstemon procerus Dougl. *Blue Beard-tongue.* Smooth throughout, stems slender, 2–12 inches high. Leaves lanceolate, 1–2 inches long, those of the middle of the stem largest, usually entire. Flowers in dense verticillate clusters, in a more or less elongated head; corolla bright blue with a slender funnel-form tube ½ an inch or more long; the lower lip bearded within.

In open dry or moist ground throughout the Rockies, not common; most abundant in the valley of the Kicking Horse River at Field; flowering in June.

Pentstemon pseudo-humilis Rydb. Smooth; stem 8–12 inches high, simple. Basal leaves broadly spatulate or elliptic, thin, firm, obtuse, or acute, contracted into a slightly winged petiole, with entire margins; stem leaves oblanceolate, oblong or lanceolate,

mostly all opposite. Flowers blue or bluish-purple in a loose panicle, with more or less glandular-hairy branches; calyx glandular-hairy, ¼ of an inch long, deeply cleft into lanceolate lobes; corolla slightly hairy, about ¾ of an inch long, funnel-form, slightly oblique.

In open ground and slopes in the Selkirks; flowering in July.

Veronica americana Schwein. *American Brooklime.* Smooth throughout; stems decumbent, rooting at the lower nodes, 6 inches to 2 feet long. Leaves oblong, ovate, or oblong-lanceolate, all distinctly petioled, sharply serrate with a wedge-shaped or rounded base, obtuse or acute at the apex, 1–3 inches long, ¼–1 inch broad. Flowers in racemes on slender peduncles in the axils of the leaves; corolla blue or nearly white, striped with purple, nearly ¼ of an inch broad, rotate, with 4 unequal lobes.

In brooks and swampy places in the Selkirks, especially around Glacier; flowering throughout the summer.

Veronica Wormskjoldii R. and S. *Alpine Speedwell.*

Hairy throughout with brown glandular hairs; stems ascending or erect, slender, usually simple, 2–12 inches high. Leaves oblong, ovate or elliptic, sessile, mostly rounded at both ends, crenulate or entire, ½–1 inch long. Flowers light blue, in a short, narrow raceme; corolla, ⅛ of an inch broad, rotate, lobes nearly equal and rounded.

Throughout the region in open woods, and in alpine meadows and slopes up to 7000 feet elevation; flowering during June and July.

Veronica serphyllifolia L. *Thyme-leaved Speedwell.*

Slightly hairy or smooth; stems slender, decumbent, the branches ascending or erect, 2–10 inches high. Leaves all opposite and petioled or the uppermost sessile, oblong, oval or ovate, ¼–½ an inch long, crenulate, entire. Flowers in short spicate racemes at the ends of the stems and branches; corolla pale blue or

sometimes white, with darker stripes, nearly ¼ of an inch broad.

In open grassy ground at the lower altitudes throughout the Selkirks, very abundant and striking in the lawn at Glacier House; flowering during June.

Mimulus Lewisii Pursh. *Red Monkey-flower.* Stems viscid-hairy, 2–4 feet high. Leaves from oblong-ovate to lanceolate, acuminate, denticulate, opposite, 2–4 inches long and ½ as broad. Flowers on peduncles longer than the leaves; calyx campanulate, ¾ of an inch long, with triangular acute teeth; corolla rose-red or paler, the tube twice as long as the calyx, throat open, limb two-lipped; lobes of the upper lip erect or turned backward, obcordate, the lower lip spreading, the lobes obovate.

In wet ground and along streams through the Selkirks, frequently growing in such abundance as to practically exclude all other vegetation; the large showy, rose-purple

flowers, each with two bright yellow patches in the throat.

Mimulus cæspitosus Greene. *Yellow Monkey-flower.* Smooth, stems flattened, decumbent and rooting at the nodes, the branches rising 3–6 inches high. Leaves orbicular or ovate, ½–1 inch long, dentate or denticulate, usually sublyrate, purple beneath. Flowers axillary on long peduncles; calyx campanulate, ⅓ of an inch long, mottled with dark purple; corolla bright yellow, ¾–1 inch long, throat spotted with dark red, lobes of the upper lip erect, ⅓-½ an inch long, the middle lobe of the lower lip broadly cordate, pendulous.

In wet, gravelly soil around springs and in the beds and banks of alpine brooks, through the Selkirks, often forming large patches; flowering in July.

Mimulus moschatus Dougl. *Musk Plant.* Hairy with soft and glandular hairs, musk scented; stems creeping or ascending, branched, slender, 6–12 inches long. Leaves ovate or oblong, short petioled, acute or

obtuse at the apex, denticulate, rounded or subcordate at the base, 1–2 inches long, half as broad. Flowers ¾ of an inch long on axillary peduncles, shorter than the leaves; corolla funnel-shaped with a spreading limb nearly ½ an inch broad, bright yellow.

In wet shaded ground at the lower altitudes, throughout the Selkirks; flowering during June and July.

Castilleja purpurascens Greenm. *Painter's Brush.*

Perennial more or less purplish throughout, stems erect or nearly so, 4–12 inches high, usually, several from the same root, smooth or somewhat hairy below, soft hairy above. Leaves sessile, clasping, linear or narrowly lanceolate, ¾–2 inches long, usually attenuate and acute, entire and undivided or occasionally 3-cleft near the apex, smooth or the uppermost soft-hairy, 3-nerved. Inflorescence in a close terminal raceme, later elongated, about 3 inches long, close-hairy; bracts ovate-lanceolate or oblong-ovate, 1–1¼ inches long,

usually entire or occasionally cleft, from deep purple-red to scarlet and rarely yellow to tinged with red or pink; calyx ¾–1 inch long, ranging in color with the bracts; corolla 1–1½ inches long, galea green or greenish-yellow with scarlet margins and exserted beyond the calyx and floral bracts.

Frequent in the lower altitudes through the Rockies; very abundant and striking on the flood-plain of the Kicking Horse River at Field; flowering during June.

Castilleja pallida Kunth. *White Indian Paint-brush*

Commonly hairy with weak cobwebby hairs, a foot or less high. Leaves linear to lanceolate or the upper ovate lanceolate. Flowers in dense leafy-bracted spikes; bracts oval or obovate, partly white or yellowish, cobwebby-hairy, equalling the corolla; calyx 2-cleft, the lobes oblong or lanceolate, corolla ½–1 inch long; galea not exceeding the calyx.

In moist open grounds at the higher altitudes throughout the Rockies; flowering in July.

Castilleja miniata Dougl. *Bright Painted Cup.*

A foot or two high, mostly simple and strict, smooth or nearly so. Leaves lanceolate or linear or the upper ovate-lanceolate acute, entire or rarely 3-cleft. Flowers in a dense, short, hairy spike; bracts from lanceolate to oval, mostly bright red or crimson, occasionally pinkish, rarely whitish, seldom lobed; calyx lobes lanceolate, acutely 2-cleft; corolla over an inch long; galea exserted, linear, longer than the tube.

In moist alpine meadows throughout the Rockies; flowering in July.

Castilleja lanceifolia Rydb. *Scarlet Painted-Cup.*

Perennial with a long creeping rootstock, not growing in clumps, 1–2 feet high, sparingly close-hairy or nearly smooth, very leafy. Leaves lanceolate; often acuminate, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long, rather firm, 3-veined, the upper seldom if ever cleft. Flowers in a compact terminal head; bracts bright scarlet, oblong, obtuse;

calyx 1 inch long, crimson or scarlet with a green base about equally cleft; corolla yellowish-green, ½ an inch longer than the calyx.

In moist open woods throughout the Rockies at the lower altitudes on the eastern slope; flowering in June and July.

Orthocarpus luteus Nutt. *Yellow Orthocarpus.*

Annual, rough-hairy; stems stout, erect, branched above or simple, 6–18 inches high, densely leafy. Leaves erect or ascending, linear or lanceolate, entire or sometimes 3-cleft, 1–1½ inches long, sessile, long acuminate; bracts of the dense spike lanceolate, broader and shorter than the leaves, entire or 3-cleft, green, mostly longer than the flowers. Flowers bright yellow, an inch long or less, the upper lip ovate, obtuse, about as long as the sac-like 3-toothed lower one.

In open ground in the lower valleys throughout the region as far west as the valley of the Columbia River at Beavermouth; flowering throughout the summer.

Elephantella grœnlandica (Retz.) Rydb. *Long-beaked Elephantella.*

Whole plant usually purple, smooth; stem simple, erect, 1–1½ feet high. Leaves alternate, lanceolate in outline, pinnately parted or the lower pinnately divided into lanceolate, acute, crenulate, or incised segments, the upper sessile, the lower slender-petioled 2–6 inches long. Flowers in a very dense spike 1–6 inches long; calyx short, acutish; corolla red or purple, the galea produced into a slender beak ½–¾ of an inch long, which is decurved against the lower lip and upwardly recurved beyond it; body of the corolla about ¼ of an inch long.

In open bogs and wet alpine meadows at the higher altitudes throughout the Rockies; flowering in July.

Pedicularis racemosa Dougl. *White Lousewort.*

Smooth throughout, simple or sometimes branching, 6–18 inches high. Leaves lanceolate, undivided, minutely and doubly crenulate, 2–4 inches long. Flow-

ers short-pedicelled in a short leafy raceme or spike, or the lower remote in the axils of the leaves; corolla white, showy, the galea which is half an inch long produced into a slender, elongated, incurved beak nearly reaching the apex of the broad lower lip.

At the higher altitudes in the Rockies in moist open ground and alpine meadows, flowering in July.

Pedicularis bracteosa Benth. *Wood Betony.*

Smooth, 1–3 feet high; leaves 3–10 inches long, all pinnately parted, the lower divided, ample; divisions of the leaves ½–2 inches long, linear-lanceolate. Flowers crowded in a cylindrical, leafy-bracted spike, 2–6 inches long; corolla less than an inch long, pale yellow or reddish, the galea much longer than the lip with a hooded summit.

Frequent throughout the Rockies in moist open woods and alpine meadows at the higher elevations; flowering during July.

LENTIBULARIACEÆ

Butterwort Family

In our species, stemless herbs with fibrous roots and 1-flowered scapes; basal, tufted, entire leaves, the upper surface covered with a viscid secretion, to which insects adhere and are caught by the curling of the sensitive leaf margins; calyx 4–5-parted or 2-lipped; corolla sac-like and contracted into a spur.

Pinguicula vulgaris L. *Butterwort.*

Leaves pale yellowish-green, 3–7 in a rosette at the base of the scape, greasy to the touch on the upper surface, ovate-lanceolate, obtuse, 1–2 inches long, ¼ as wide. Flowers solitary on a slender scape, violet-purple, nearly ½ an inch broad when expanded, 2-lipped; the upper lip 2-lobed; the lower 3-lobed, larger; the tube gradually contracted into an obtuse or acute nearly straight spur, ⅓ of an inch long.

In wet mossy places, on rocks, or edges of gravelly stream beds throughout the

a Pinguicula vulgaris L. Butterwort.
b Pentstemon fruticosus (Pursh) Greene. (¾ Nat.)
Large Purple Beard-Tongue.

Rockies, at the lower altitudes; the bright little flowers suggesting violets; flowering during June.

Rubiaceæ

Madder Family

In our species, herbs with 4-angled stems and branches, with verticillate leaves and small 4-parted flowers, regular and perfect and fruit separating into 2-carpels.

Galium boreale L. *Northern Bedstraw.*

Smooth, erect, simple or branched, leafy, 1–2½ feet high. Leaves in 4's, lanceolate or linear 3-nerved, obtuse or acute, 1–2½ inches long, the margins sometimes fringed with hairs. Flowers white, numerous in a terminal panicle; corolla 4-parted, ⅛ of an inch across, the lobes lanceolate, acute.

In open ground and in open woods or thickets at the lower altitudes, throughout the Rockies; flowering in July.

CAPRIFOLIACEÆ

Honeysuckle Family

Shrubs, trees, vines or perennial herbs with opposite leaves and mostly cymose flowers; calyx 3–5-toothed, the corolla 5-lobed or sometimes 2-lipped; stamens 5-inserted on the tube of the corolla and alternate with the lobes; fruit a berry, drupe or capsule.

Corolla rotate or urnshaped; flowers in compound cymes.
  Leaves pinnate. **Sambucus.**
  Leaves simple. **Viburnum.**
Corolla tubular or campanulate, often 2-lipped.
  Creeping, somewhat woody herb; flowers in pairs, pink. **Linnæa.**
  Shrubs, erect or climbing.
    Corolla short campanulate, regular or nearly so. **Symphoricarpos.**
    Corolla tubular and irregular. **Lonicera.**

Sambucus pubens Michx. *Redberried Elder.*

A shrub 2–12 feet high, the twigs and leaves commonly hairy; stems woody, the younger with reddish brown pith. Leaves pinnate with 3–7 ovate-lanceolate or oval, acuminate leaflets 2–5

inches long, sharply serrate. Flowers numerous, less than $\frac{1}{4}$ of an inch broad, white, in a close oblong head 3–4 inches high, longer than broad; berries in a compact head, bright scarlet, $\frac{1}{4}$ of an inch in diameter.

Rocky places and thickets throughout the region though most abundant in the Selkirks; flowering in June, the bright red berries ripe in late summer.

Sambucus melanocarpa A. Gray. *Blackberried Elder.*

A shrub 2–12 feet high, smooth or the young leaves slightly hairy. Leaves pinnate with 3–7 or rarely 9 ovate-oblong or ovate-lanceolate, acuminate leaflets, 2–5 inches long, sharply serrate. Flowers small white in a close compound cyme 3–4 inches high and as broad; berries $\frac{1}{4}$ of an inch broad, black and shining in a close head.

Rocky places and thickets in the Selkirks, growing with the other species and difficult to distinguish from it except by the colour of the berries.

Viburnum pauciflorum Pylaie. *Few-flowered Cranberry Tree.*

A straggling bush 2–6 feet high with twigs and petioles smooth or nearly so. Leaves broadly oval, obovate or broader than long; 5-ribbed, mostly with 3 rather shallow lobes above the middle, coarsely and unequally dentate, smooth above, more or less hairy on the veins beneath, $1\frac{1}{2}$–3 inches broad. Flowers small, pure white or pinkish, $\frac{1}{4}$ of an inch broad in compact axillary heads an inch or so broad; drupe globose, bright red, acid, about half an inch long.

A most attractive shrub in thickets and woods at the lower altitudes throughout the Rockies; flowering in May and early June; the acid fruit is frequently used for preserving.

Linnæa americana Forbes. *Twin-flower.*

Branches slender, woody, slightly hairy, trailing, 6–24 inches long. Leaves evergreen, opposite, obovate or orbicular, obscurely crenate, thick, $\frac{1}{4}$–$\frac{3}{4}$ of

Linnæa americana Forbes. (¼ Nat.)
American Twin-Flower.

Lonicera ebractulata Rydb. (½ Nat.)
Fly Honeysuckle.

an inch wide, sometimes wider than long. Flowers nodding in pairs, rarely in 4's, on slender pedicels $\frac{1}{4}$–$\frac{3}{4}$ of an inch long, very fragrant; corolla tubular-campanulate with 5 equal lobes, pink or nearly white, deep pink within.

In moist cool woods, frequent throughout the region, especially in the Rockies; flowering in late June and early July.

Symphoricarpos racemosus Michx. *Snowberry.*

An erect shrub, 1–4 feet high, smooth or nearly so with slender branches. Leaves oval, obtuse at each end, 1–2 inches long, entire, undulate or sometimes dentate. Flowers pale pink or white, few, in axillary clusters; corolla campanulate, $\frac{1}{4}$ of an inch long, equally 5-lobed, slightly inflated at the base and bearded within; berries snow-white, nearly $\frac{1}{2}$ an inch in diameter.

On rocky banks and along streams at the lower altitudes throughout the Rockies; flowering during July.

Symphoricarpos pauciflorus (Robbins) Britton. *Low Snowberry.*

A low, spreading, diffusely-branched shrub 6–9 inches high. Leaves broadly oval or orbicular, entire, softly hairy, especially along the veins beneath. Flowers about ¼ of an inch long, solitary in the upper axils, and 2 or 3 in the terminal spike; corolla campanulate, 5-lobed, bearded within; berry globose, white, ¼ of an inch in diameter.

In rocky places and on wooded slopes throughout the Rockies; flowering in July.

Lonicera glaucescens Rydb. *Douglas's Honeysuckle.*

Smooth, more or less shrubby or twining. Leaves smooth above, glaucous and hairy at least on the veins beneath, 1½–2 inches long, papery on the margins, usually only the upper pair connate-perfoliate. Flowers in a short terminal interrupted spike, corolla 1 inch long or less, yellow changing to reddish, slightly

hairy without, long-hairy within, the tube rather strongly inflated at the base, the 2-lipped limb shorter than the tube, stamens and style exserted.

In rocky places and along river banks throughout the Rockies; flowering during July.

Lonicera ebractulata Rydb. *Fly Honeysuckle.*

Shrubby, 3–6 feet high with grey bark. Leaves light green, glaucous and hairy beneath, fringed with hairs on the margins, elliptic-ovate or broadly-ovate, obtuse, rounded or cordate at the base, rounded at the apex, 1–2½ inches long, ½–1½ inches wide. Flowers in pairs from the axils of the leaves; peduncles about ½ an inch long; corolla light yellow, about ¾ of an inch long, funnel-form, and spurred at the base on the inner side; berry bright red, ¼ of an inch in diameter.

In moist woods throughout the region at the lower altitudes; flowering in May and early June.

Lonicera involucrata (Richards) Banks. *Involucred Fly Honeysuckle.*

A nearly smooth shrub 3–10 feet high. Leaves short-petioled, ovate, oval or obovate, 2–6 inches long, acute or acuminate at the apex, narrowed or rounded at the base, more or less hairy at least when young. Flowers greenish-yellow, 2 or 3 on axillary peduncles, 1–2 inches long, bracts foliaceous, ovate or oval, often cordate, bractlets larger, greenish-yellow, at length turning rich maroon and surrounding the fruit; corolla hairy, funnelform; the limb nearly equally 5-lobed; stamens and styles slightly exserted; berries separate, globose or oval, nearly black, about $\frac{1}{3}$ of an inch in diameter.

In rich moist woods and thickets at the lower altitudes throughout the region, inconspicuous when in flower in late June and early July, but especially showy when in fruit, the blue-black berries subtended by the showy maroon bracts, making it a most striking shurb during summer and early autumn.

Lonicera involucrata (Richards.) Banks. (⅔ Nat.)
Involucred Fly Honeysuckle.

VALERIANACEÆ

Valerian Family

Perennial strongly smelling herbs, with opposite leaves and paniculate heads of small pink or white, funnel-form, more or less gibbous flowers, commonly with 3 exserted stamens.

Valeriana septentrionalis Rydb. *Northern Valerian.*

Erect, perfectly smooth throughout or the inflorescence minutely hairy, 8–16 inches high. Basal, leaves petioled, spathulate or oval, 1–5 inches long, entire; stem leaves usually 3 pairs, the lower petioled, the upper sessile, segments, 5–7 oval or linear-lanceolate, entire or merely undulate on the margins. Flowers cymose-paniculate, usually congested; corolla white, about $\frac{1}{4}$ of an inch long; fruit smooth, $\frac{1}{8}$ of an inch or slightly longer.

In moist shaded places and on slopes in the lower valleys of the Rockies; flowering in July.

Valeriana Scouleri Rydb. *Scouler's Valerian.*

Smooth throughout; stem rather stout, 1–3 feet high. Leaves, the basal on long petioles, oblong, 1–2 inches long, 3-lobed, the centre one much the largest, oblong, tapering to both ends, the lateral lanceolate; stem leaves, 2–4 pairs pinnately parted in 5–7 lanceolate, acute, entire, or undulate segments, 1–2 inches long. Flowers pink in a flat, cymose panicle, 2–2½ inches broad; corolla nearly ¼ of an inch long, funnel-form; stamens and style exserted.

In moist open ground throughout the Rockies at the higher elevations; flowering during June and early July.

Valeriana sitchensis Bong. *Wild Heliotrope.*

Smooth; stems rather stout, 1–5 feet high, often branching. Leaves in 2–4 pairs, pinnately 3–5-lobed, leaflets ovate to oblong or lanceolate, acuminate, coarsely dentate, 1–2 inches long, densely white-hairy at the base of the petioles; basal leaves lacking at the time of flowering. Flowers very

Valeriana sitchensis Bong. (⅛ Nat.)
Wild Heliotrope.

Lobelia Kalmii strictiflora Rydb. (Nat.)
Brook Lobelia.

fragrant, pink, in a compact cymose panicle, corolla broad, funnel-form, ¼ of an inch long with spreading rounded lobes; stamens and style much exserted.

Common along the streams and in damp places in the Selkirks, at times forming vast masses of pink when in flower in June and early July.

Campanulaceæ

Bellflower Family

Herbs with alternate simple leaves, usually milky juice, and perfect flowers; calyx mostly 5-lobed; corolla regular or irregular, the tube entire or deeply cleft on one side, its limb 5-lobed, regular or more or less 2-lipped; stamens 5, alternate with the corolla lobes.

Campanula uniflora L. *Arctic Harebell.* Smooth or nearly so, simple, 1–6 inches high. Leaves linear or linear-oblong, acute, sessile, thickish entire or sparingly dentate, ¾–1½ inches long or the lower and basal ones spatulate, obtuse and narrowed into

petioles. Flowers erect, calyx tube top-shaped, smooth or hairy, shorter than or equalling the lobes; corolla narrowly campanulate, $\frac{1}{3}$–$\frac{1}{2}$ an inch long, bright blue, with 5 slightly spreading lanceolate lobes.

Alpine summits in the Rockies not common; flowering in July.

Campanula rotundifolia L. *Harebell, Bluebell.* Smooth or nearly so, stems erect or spreading, often several from the same root, simple or branched, 6 inches to 2 feet high. Basal leaves nearly orbicular or broadly ovate, usually heart-shaped and slender petioled, $\frac{1}{4}$–1 inch wide, dentate or entire, often wanting at flowering time; stem leaves linear or linear-oblong acute, mostly entire and sessile or the lower narrowed into short petioles and somewhat spatulate. Flowers several or numerous in racemes, drooping or spreading, slender pedicelled; calyx lobes hair-like, spreading, longer than the tube, corolla bright blue, campanulate, $\frac{1}{2}$–1 inch long.

On moist rocks or stony places, on slides

or gravelly stream banks, frequent throughout the region; flowering during most of the summer.

Lobelia Kalmii strictiflora Rydb. *Brook Lobelia.*

Smooth throughout or slightly hairy below; stem simple or slightly branched, erect, leafy, 4–8 inches high. Leaves basal, small, $\frac{1}{4}$–$\frac{1}{2}$ an inch long, obovate, hairy; stem leaves linear. Flowers light blue or white, $\frac{1}{3}$ or nearly $\frac{1}{2}$ an inch long on erect pedicels slightly more than their own length; petals 5, the two upper erect, $\frac{1}{8}$ of an inch long, very slender, the 3 lower broader, $\frac{1}{4}$ of an inch long and spreading, in loose racemes, lower bracts linear lanceolate, the upper hair-like.

On wet banks or wet gravelly or sandy ground at the lower altitudes throughout the Rockies, abundant locally; flowering in July.

Cichoriaceæ

Chicory Family

Herbs almost always with milky juice,

alternate or basal leaves and yellow or rarely pink, blue, purple, or white flowers in involucrate heads; bracts of the involucre in 1 to several series; flowers all alike and perfect; corolla with a short or long tube and a strap-shaped (ligulate) usually 5-toothed limb (ray).

Heads solitary; leaves all basal.	
Achenes smooth at the apex.	**Agoseris.**
Achenes spinulose at the apex.	**Taraxacum.**
Heads several; leaves not all basal.	
Achenes flattened.	
Flowers yellow.	**Sonchus.**
Flowers blue.	**Lactuca.**
Achenes rounded.	
Pappus white.	**Crepis.**
Pappus tawny.	**Hieracium.**

Agoseris glauca (Pursh.) Greene. *Large-flowered Agoseris.*

Pale and smooth throughout or a little woolly below. Leaves linear-lanceolate or oblong, entire, dentate or pinnatifid, 2–10 inches long, acuminate. Scapes stout, smooth or slightly hairy, longer than the leaves, 6–18 inches high, head 1–2 inches broad, rays bright yellow, involucre oblong, campanulate, usually smooth.

Open grounds and on grassy alpine slopes

a Hieracium umbellatum L. Narrow-Leaved Hawkweed.
b Agoseris aurantiaca (Hook.) Greene. (⅔ Nat.)

and in meadows; flowering during June and July.

Agoseris aurantiaca (Hook.) Greene. *Orange-flowered Agoseris.*

Nearly smooth, not glaucous. Leaves oblanceolate, obtuse, entire or with lanceolate lobes toward the base, narrowed into slender petioles, 4–8 inches long. Scapes longer than the leaves, smooth below, woolly at the top; involucre $\frac{1}{2}$–$\frac{3}{4}$ of an inch high, bracts lanceolate, more or less woolly, flowers orange or copper-coloured.

In open ground and alpine meadows throughout the region; flowering in midsummer.

Agoseris graciliens (A. Gray) Greene. *Slender Agoseris.*

Smooth, leaves lanceolate or linear-lanceolate entire, 6–8 inches long, acute. Scapes slender, 10–18 inches high, woolly at the summit; involucre $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, bracts narrow, smooth with hairy-fringed margins; flowers deep orange.

In grassy alpine meadows throughout the

Rockies at the higher altitudes; flowering during July.

Taraxacum Taraxacum (L.) Karst. *Dandelion.* Root thick and deep. Leaves oblong to spatulate in outline, usually rough-hairy at least when young, acute or obtuse, pinnatifid, sinuate-dentate or rarely nearly entire, rather succulent, 3–10 inches long ½–2½ inches wide, narrowed into petioles. Scapes erect, 2–18 inches high, head 1–2 inches broad, containing very numerous golden-yellow flowers, inner bracts of the involucre, linear or linear-lanceolate, the outer similar, shorter, not glaucous, reflexed, acute; achenes greenish brown.

In waste places and open ground throughout the region, along roadsides and near the railway; established as a weed; flowering in early summer.

Taraxacum montanum Nutt. *Mountain Dandelion.* Smooth; scapes and leaves from the crown of a thick, vertical root. Leaves spatulate, oblong, nearly entire or runcinately

toothed, obtuse, the teeth shallow and simple, 3–4 inches long, $\frac{1}{2}$–$\frac{3}{4}$ of an inch wide. Flowers bright orange or yellow on smooth scapes, 4–8 inches high; involucral bracts all appressed, in 2-series, the outer ovate to lanceolate, frequently reddish; inner ones narrowly lanceolate.

Throughout the Rockies in the lower valleys and slopes; flowering in early June.

Sonchus arvensis L. *Milk Thistle.* Stems smooth, leafy below, branched and nearly naked above, 2–4 feet high. Lower and basal leaves runcinate-pinnatifid, often 12 inches long, spinulose dentate, narrowed into short petioles, the upper pinnatifid or entire, clasping. Flowers bright yellow, numerous in showy heads, 1–2 inches broad; involucre nearly an inch high.

An introduced weed, occurring more or less frequently along the line of the railway throughout the region; a showy plant when in flower, during the early part of the day.

Lactuca pulchella (Pursh) DC. *Large-flowered Blue Lettuce.*

Smooth throughout and somewhat glaucous; stem rather slender and leafy, 1–3 feet high. Leaves linear-lanceolate, lanceolate or oblong, acute, entire, dentate, lobed or pinnatifid, 2–8 inches long. Flowers bright blue or violet in numerous heads ½ an inch or more broad, in an open panicle.

Frequent along the railway in moist open places throughout the region; flowering in midsummer.

Crepis nana Richards. *Alpine Hawk's-beard.*

Smooth, forming depressed tufts on slender, creeping rootstocks. Leaves chiefly at the root, 1–2 inches long including the petioles, obovate to spatulate, entire, repand-dentate or lyrate, commonly equalling the clustered stems. Heads few-flowered, nearly ½ an inch high, narrowly cylindric, ⅛ of an inch in diameter; flowers bright yellow, spreading ¼ of an inch across.

A small alpine plant growing among loose

stones and on the moraines and on slides and summits throughout the Rockies; flowering in midsummer.

Crépis elegans Hook. *Many-flowered Hawk's-beard.* Smooth, many-stemmed from a perennial tap-root, 6–12 inches high, diffusely branched. Leaves entire or nearly so; root leaves spatulate; stem-leaves from lanceolate to linear. Heads numerous, narrowly cylindric, $\frac{1}{4}$–$\frac{1}{3}$ of an inch high, the pale yellow flowers little more than $\frac{1}{8}$ of an inch across.

In gravel beds along the rivers and larger streams throughout the Rockies; flowering during July.

Hieracium umbellatum L. *Narrow-leaved Hawk-weed.* Stem rather slender, smooth or puberulent, sometimes rough hairy below, leafy, simple, 1–2$\frac{1}{2}$ feet high. Leaves lanceolate or the lowest spatulate, entire, denticulate or sometimes laciniate-dentate, acute or acuminate, 1–3 inches long, smooth above, usually hairy beneath with the

margins fringed with hairs. Heads of flowers nearly an inch broad, umbellate, bright yellow.

On banks and near rivers in the Rockies; flowering in July.

Hieracium Scouleri Hook. *Hairy Hawk-weed.* Hairy throughout with long, soft hairs; 1–2 feet high. Leaves lanceolate or spatulate-lanceolate, 3–6 inches long. Flowers in an irregular branching panicle. Head ½ an inch high; involucre with copious long bristly hairs; flowers bright yellow, ½ an inch or more broad.

On banks and stony open ground throughout the region flowering during July.

Hieracium gracile Hook. *Slender Hawk-weed.* Growing in tufts, pale green. Leaves nearly all in clusters at the root, obovate to oblong-spatulate, 1–3 inches long, attenuate into petioles, entire or repand denticulate. Stems 8–18 inches high, brownish-hairy above, bearing few or several heads of flowers near the top; involucres

about $\frac{1}{3}$ of an inch high, usually blackish-hairy at the base; flowers bright yellow in heads $\frac{1}{4}$ of an inch or less broad.

In dry open or shaded places at the higher elevations throughout the region, growing in sand; flowering in July.

Hieracium albiflorum Hook. *White-flowered Hawk-weed.* Loosely branching and hairy with long hairs; 1–3 feet high. Leaves oblong, thin, 2–6 inches long. Involucres narrow-campanulate, $\frac{1}{3}$ to nearly $\frac{1}{2}$ an inch high; flowers white, $\frac{1}{4}$ of an inch across or more; several in a compound cyme.

On sandy banks and open mountain sides, frequent throughout the region at the lower elevations; flowering during June and July.

Carduaceæ

Thistle Family

Herbs with watery or resinous sap and alternate, opposite or basal leaves; flowers

perfect, pistillate or neutral; borne on a common receptacle forming heads, surrounded by an involucre of few to many bracts in one or more series; calyx tube attached to the top of the ovary, the limb (pappus) of bristles, awns, teeth, scales, crown-like or wanting; corolla tubular, usually 5-lobed or -cleft, the marginal flowers frequently expanded into a ligule (ray); when the ray flowers are absent the head is said to be discoid, when present, radiate; the tubular flowers form the disc. The largest of all the families of flowering plants comprising about 760 genera and not less than 10,000 species, represented in the region by the following:

Anthers not tailed at the base; heads rayed or rayless.
  Style branches of the perfect flowers flattened, with terminal appendages.
    Rays yellow or sometimes wanting.
      Pappus double, the outer very short. **Chrysopsis.**
      Pappus simple; panicle compact. **Solidago.**
    Rays white, purple, or blue, rarely wanting.
      Involucral bracts in 1–2 series, narrow; rays usually narrow and numerous. **Erigeron.**
      Involucral bracts in 2–5 series; rays broader and less numerous.

Scales of the involucre dry, papery and appressed. **Eucephalus.**
Scales of the involucre more or less herbaceous, and spreading. **Aster.**
Style branches of the perfect flowers straight edged or with hairy tips.
Involucre not scarious.
Pappus never capillary; receptacle chaffy or bristly.
Receptacle conic, chaffy; pappus none. **Rudbeckia.**
Receptacle flat, chaffy; tall herbs; pappus 2 scales. **Helianthus.**
Receptacle bristly; pappus a crown of scales. **Gaillardia.**
Pappus capillary.
Leaves all or mostly opposite. **Arnica.**
Leaves alternate.
Flowers white or pinkish; leaves large. **Petasites.**
Flowers yellow, leaves small. **Senecio.**
Involucre scarious.
Receptacle chaffy; rays short. **Achillea.**
Receptacle naked; rays conspicuous. **Chrysanthemum.**
Receptacle naked; rays none. **Artemisia.**
Anthers with tails at the base; heads without rays.
Receptacle not bristly; corolla not deeply cleft.
Pappus hair-like in pistillate flowers; club shaped in staminate. **Antennaria.**
Pappus of all the flowers similar. **Anaphalis.**
Receptacle long bristly; corolla deeply cleft.
Leaves and usually the involucral bracts prickly. **Carduus.**
Leaves and involucral bracts not prickly. **Saussurea.**

Chrysopsis hispida (Hook.) Nutt. *Hispid Golden Aster.*

Stems numerous from a woody rootstock, rough-hairy throughout, spreading, 6–12 inches long. Leaves spatulate to oblong, entire, spreading, ¾–1½ inches long, obtuse at the apex, narrowed at the base, often into petioles half as long as the blade or more. Heads very numerous, about ½ an inch broad; involucre less than ½ an inch high, its bracts lanceolate, rough-hairy; ray flowers bright yellow, ¼ of an inch or more long.

In dry soil through the lower valleys throughout the Rockies; flowering in midsummer.

Solidago multiradiata Ait. *Northern Goldenrod.*

Stems smooth or somewhat hairy above, slender, 6–15 inches high. Leaves firm, smooth or nearly so, the basal and lower ones spatulate or oblanceolate, entire or sparingly serrate, obtuse, finely reticulate-veined, 3–5 inches long, the upper smaller and narrower, entire. Heads about

⅓ of an inch high, usually few in a rather compact terminal cyme; bracts of the involucre thin, linear-lanceolate, acute, smooth; rays 8–15, large.

On open hillsides throughout the region; flowering in July.

Solidago decumbens Greene. *Field Goldenrod.* Stems clustered at the summit of a strong, perpendicular root, stout, decumbent, 6–18 inches high, usually dark red and sparsely hairy. Leaves spatulate-obovate to oblanceolate, obtuse or acutish, more or less distinctly serrate toward the summit, upper cauline leaves similar but few and reduced, all rough on the margins. Heads large in a thyrsoid panicle; bracts of the involucre glandular-viscid, linear, obtuse, of firm texture, nerved; rays large.

Solidago missouriensis Nutt. *Missouri Goldenrod.* Smooth, rather slender, 3–5 feet high. Leaves firm or thick, those of the stem linear-lanceolate and sessile, acuminate at the apex, narrowed at the base,

2–4 inches long, rough-margined, triple-nerved, entire or sparingly serrate with low sharp teeth, the basal and lowest ones longer, spatulate and petioled. Heads $\frac{1}{8}$–$\frac{1}{4}$ of an inch high on one side of the spreading or recurving branches of the short panicle; bracts of the involucre oblong, greenish-tipped, obtuse; rays 6–13, short.

In dry soil on the edges of woodland at the lower altitudes throughout the Rockies; flowering in August.

Solidago canadensis L. *Canada Goldenrod.* Stout, rough-hairy or slightly so, 2–8 feet high. Leaves lanceolate, triple-nerved, acute at each end, the lower ones sharply serrate and petioled, 3–6 inches long, $\frac{1}{3}$–1 inch wide, the upper smaller, entire. Heads small, $\frac{1}{8}$ of an inch or less high, very numerous on one side of the spreading or recurved branches of the usually large and dense panicle; involucral bracts linear, obtuse or acutish; rays 9–15 small.

In open usually dry soil at the lower alti-

a Erigeron salsuginosus (Rich.) A. Gray.
Large Purple Fleabane.

b Erigeron acris L. Blue Fleabane.

c Saussurea densa Hook. Saussurea. (3/5 Nat.)

tudes throughout the Rockies; flowering during July and August.

Erigeron simplex Greene. *Arctic Fleabane.*

Stems 1–6 inches high, several from the same root. Leaves few, the basal spatulate or oblanceolate, 1–2 inches long; stem leaves linear and few. Heads $\frac{1}{3}$ of an inch in diameter, solitary; involucre usually rough-hairy as well as woolly, bracts linear-acute, rather close, rays $\frac{1}{4}$–$\frac{1}{3}$ of an inch long, white, very numerous.

An alpine plant in dry ground at the higher elevations, among stones and on the moraines, flowering in July.

Erigeron salsuginosus (Richards) A. Gray. *Large Purple Fleabane.*

Soft hairy above, 12–20 inches high. Leaves smooth, thick, bright green, spatulate or nearly ovate, acute or conspicuously bristle-tipped, the uppermost small and bract-like. Heads over $1\frac{1}{2}$ inches in diameter; rays 50–70, purple or violet, $\frac{1}{2}$–$\frac{3}{4}$ of

an inch long; disc bright yellow; involucral bracts linear, attenuate and spreading, glandular-hairy.

A most striking violet or purple daisy on moist banks, slopes, and in moist, open woodlands; flowering during July.

Erigeron asper Nutt. *Rough Fleabane.* Stem simple or branched above, more or less hairy, sometimes roughly so, 6–24 inches high. Leaves smooth, hairy or fringed on the margin with hairs, entire, the basal ones spatulate, obtuse, 2–4 inches long, narrowed into a margined petiole; stem leaves oblong-lanceolate or linear-lanceolate, obtuse or acute, the upper smaller. Heads several or solitary, slender peduncled, $\frac{1}{3}$–$\frac{1}{2}$ an inch broad; involucre hemispheric, its bracts linear, acute, or rough hairy; rays 100–150, very narrow, violet-purple or nearly white, $\frac{1}{3}$ to nearly half an inch long.

In dry soil in the lower valleys and slopes of the Rockies; flowering in July.

Erigeron cæspitosus Nutt. *Tufted Fleabane.*

Stems tufted, closely white-hairy from a deep root; simple or branched above, 6–12 inches high. Leaves white-hairy, entire, narrowly oblanceolate or spatulate, obtuse or acutish, 1–3 inches long; stem-leaves linear or linear-oblong, acute or obtuse, the upper gradually shorter. Heads solitary or several, short-peduncled, $\frac{1}{3}$–$\frac{1}{2}$ an inch broad; involucre hemispheric its bracts lanceolate or linear-oblong acute, white-hairy; rays 40–60, $\frac{1}{4}$–$\frac{1}{3}$ of an inch long, white or pinkish.

In dry open places in the Rockies at the lower altitudes, a pretty tufted plant resembling an Aster; flowering during July.

Erigeron multifidus Rydb. *Daisy Fleabane.*

Rough-hairy or somewhat smooth, stems slender, numerous, 3–6 inches high. Leaves crowded on the crowns of the caudex, usually twice ternately parted into linear or spatulate hairy lobes; an inch long or less including the petiole;

stem-leaves narrow or scale-like. Flowers solitary at the top of the nearly leafless hairy stem; involucre ¼ of an inch high and nearly ½ an inch in diameter, outer bracts shorter and spreading; rays 40–60, white, purple or violet, from ⅛ to nearly ½ an inch long.

On dry rocks throughout the Rockies up to 6000 feet elevation or above, flowering during June or July.

Erigeron multifidus discoideus (*A. Gray.*) *Rydb.*, differing from the species in the entire absence of ray flowers and smaller heads, and *Erigeron multifidus nudus Rydb.*, differing from the species in being almost entirely smooth except a few hairs on the petioles and involucral bracts, are found in similar localities throughout the Rockies, often growing with the species and frequently much more abundant.

Erigeron aureus Greene *Golden Fleabane.*

Ashy-hairy, 3–6 inches high from a tufted caudex. Leaves ovate, spatulate or roundish, ½ an inch or more long, con-

Erigeron discoideus Rydb.
Erigeron multifidus Rydb. (½ Nat.)
Cut-Leaved Fleabane.

Erigeron melanocephalus A. Nelson. (¾ Nat.)
Black-Headed Fleabane.

tracted into a petiole; stem leaves ¼ of an inch long, few, and very narrow. Flowers solitary, about ⅓ of an inch high and broad; involucre usually reddish or purplish, covered with woolly hairs; bracts nearly equal, lanceolate, rather loose; rays numerous, ¼–⅓ of an inch long, deep golden yellow.

In open ground on alpine meadows and among rocks, at the higher altitudes, throughout the region; a striking little plant, flowering in July.

Erigeron melanocephalus A. Nelson. *Black-woolly Fleabane.*

Stems few or several, slender, erect, 2–6 inches high, with purplish-black hairs. Leaves numerous, elliptic or narrowly oblong, ¾–1½ inches long, nearly smooth; stem leaves broadly linear, acuminate, ¾–1 inch long, hairiness similar to that of the stem. Head solitary, ⅓ of an inch broad; involucral scales nearly equal, with attenuate tips, densely covered with purplish-black wool; rays 50–60, white or pinkish, ⅛ of an inch long.

In open stony or more or less grassy ground at the high altitudes; flowering during July.

Erigeron acris L *Blue Fleabane.* More or less hairy, varying to smooth, 3–18 inches high, simple or branching. Leaves spatulate or lanceolate, obtuse, 1–3 inches long, hairy and entire. Heads ¼ of an inch or more broad, single or several, more or less paniculately disposed; involucre hemispheric, its bracts linear and hairy; rays numerous, very narrow, only slightly exceeding the yellow disc, blue or purple.

In dry stony ground and slopes throughout the region, very variable as to size; flowering during July.

Erigeron drobrachiensis O. Muell. Nearly or quite smooth, 1–2 feet high, usually paniculately branched. Leaves spatulate to lanceolate, acute, rather numerous. Heads on peduncle-like branches, an inch or more long, involucre, ⅓ of an inch or more broad, scales narrowly lanceolate,

attenuate and glandular, green; rays numerous and thread-like, pink, but slightly exceeding the disc.

On banks and more or less shaded places at the lower altitudes throughout the Rockies; flowering during July.

Erigeron philadelphicus L. *Philadelphia Fleabane.*

Soft-hairy or sometimes nearly smooth, stems slender, mostly branched above, 1–3 feet high. Leaves spatulate or obovate, obtuse or acute, dentate or entire, 1–3 inches long. Heads several or numerous, corymbose-paniculate, $\frac{1}{4}$–$\frac{1}{3}$ of an inch broad; involucre depressed hemispheric, its bracts linear with roughened margins; rays 100–150, $\frac{1}{4}$–$\frac{1}{3}$ of an inch long, bright rose-colour.

In open grassy and wet places at the lower altitudes, throughout the Rockies; flowering in June and July. This species, the most widely distributed of any member of the genus is found throughout North America; though locally rare, where found it is usually in great abondance.

Aster Richardsonii Spreng. *Richardson's Aster.*

Hairy, often much branched from the base, 3–12 inches high. Leaves oblong, spatulate to broadly lanceolate, more or less sharply serrate, an inch or more long. Heads solitary, terminating the stem or branches; involucre broadly campanulate, ¼ of an inch high, shorter than the disc the bracts narrowly lanceolate, with mostly acute and loose herbaceous tips; rays nearly half an inch long, violet-purple.

In gravelly ground and river bottoms frequent in the region; flowering during July.

Aster conspicuus Lindl. *Large Purple Aster.*

Rough, stout, and rigid, 2 feet high. Leaves firm, ovate, oblong, or the lower obovate, acute, 4–6 inches long, 1½–4 inches broad, acutely serrate, reticulate-veiny. Flowers numerous in a broad head, involucre, broadly campanulate, equalling the disc, half an inch high; bracts in several series, minutely glandular, lanceolate,

acute, the greenish tips a little spreading; rays ½ an inch long or more, violet.

The most showy of all the Asters, frequent in the Rockies at the lower altitudes, on slides and on gravelly river banks, forming great masses of colour when flowering in late July and early August.

Aster major (Hook) Porter. *Great Northern Aster.*

Stem stout, leafy to the summit, densely long-hairy, or rarely smooth, branched above, 2–6 feet high. Leaves rather thin, lanceolate, partly clasping by a narrowed base, acuminate at the apex, sharply serrate with low distant teeth, dark green and lightly hairy above, densely soft-hairy on the veins beneath, 3–5 inches long, ½ to nearly an inch wide. Heads mostly solitary, at the ends of short branches, 1½ inches broad; involucre hemispheric, its bracts little imbricated, green, linear-subulate, densely glandular; rays 35–45 purple, about ½ an inch long.

In moist soil in the valleys of the Selkirks; flowering during August.

Aster Lindleyanus T. & G. *Lindley's Aster.*

Stem usually stout, smooth, or sparingly hairy, 1–3 feet high, branched above. Leaves rather thick, smooth or slightly hairy, especially on the veins, the lower and basal ones heart-shaped at the base, sharply serrate, ovate-acute or acuminate, 2–4 inches long, with slender, naked petioles; upper leaves ovate-lanceolate or lanceolate, more or less serrate or entire, sessile or with margined petioles. Heads usually not numerous, $\frac{1}{3}$ of an inch or more high; involucre broadly top-shaped; bracts linear-lanceolate, acute, rather loosely imbricated, smooth or nearly so, their tips green, rays 10–20, blue or violet, $\frac{1}{4}$–$\frac{1}{2}$ an inch long; pappus nearly white.

In open places and along the rivers throughout the region; flowering during July and August.

Aster ciliomarginatus Rydb.

Stems 1–2 feet high, round, slightly striate and tinged with red, smooth below, more or less hairy in lines above. Basal leaves smooth

Aster Lindleyanus T. & G. (⅔ Nat.)

except the hairy-fringed margins, thin, distantly serrate or subentire, tapering into wing-margined petioles, oblanceolate-acute, 4–8 inches long; the upper oblong or lanceolate sessile. Heads about ½ an inch high, ½–¾ of an inch in diameter, rather few in an open panicle; involucral bracts linear, fringed with hairs on the margins, the upper part foliaceous and the outer somewhat spreading; rays numerous ½ an inch long, light-blue.

In moist, more or less shaded places, edges of woods and thickets, throughout the Rockies; flowering in late July and August.

Aster frondeus (A. Gray) Greene. *Leafy-bracted Aster*

Simple, stem smooth, with sparing, erect, flowering branches. Leaves few, broadly lanceolate to oblong or spatulate, entire or nearly so, the lower tapering into winged petioles. Heads solitary or few, on naked peduncles; involucre ⅓ of an inch high, or less; bracts linear-lanceolate, loose, all equalling the disc;

rays violet or purple, nearly ½ an inch long.

In wet places and along streams throughout the Rockies; flowering during July and August.

Eucephalus Engelmanni (D. C. Eaton) Greene. *Engelmann's Aster.*

Slightly hairy or smooth, simple or somewhat branched, 18 inches to 2 feet high, bright green. Leaves thin, ovate-oblong to broadly lanceolate, 2–4 inches long, loosely veined, tapering at the apex into a slender-spined tip, the larger sometimes with a few small acute teeth. Heads ½ an inch high, hemispherical, either racemosely disposed on slender axillary peduncles, or somewhat cymose; involucral bracts mostly acute or acuminate, some outer ones loose, narrow, and partly herbaceous, or with loose pointed tips; inner purplish; rays about ½ an inch long, spreading, violet or pinkish.

In open woods and on slopes, principally in the Rockies at the higher elevations; flowering during July.

Rudbeckia hirta L. *Black-eyed Susan, Yellow Daisy.*

Rough-hairy throughout, stems simple or sparingly branched, often tufted, 1–3 feet high. Leaves thick, sparingly serrate with low teeth or entire, lanceolate or oblong, the lower and basal ones petioled, mostly obtuse, 3–5-nerved, 2–7 inches long, ½–2 inches wide, the upper sessile, narrower, acute or acutish. Heads commonly few or solitary, 2–4 inches broad; rays 10–20, deep yellow or orange; bracts of the involucre very rough-hairy; spreading or reflexed, much shorter than the rays; disc globose-ovoid, purple-brown.

Throughout the region, not infrequent along the railway from Field west to the valley of the Columbia at Beavermouth; flowering in July and August.

Helianthus scaberrimus Ell. *Stiff Sunflower.*

Stems simple or a little branched, rough-hairy or only slightly so, 1–8 feet high. Leaves thick, leathery, serrate, rough-hairy on both sides, 2–7 inches long, ½–2 inches

wide, acute at the apex, narrowed at the base, the lower ovate or ovate-oblong, petioled, the upper lanceolate or oblong-lanceolate, sessile or short-petioled, all opposite, or the uppermost bract-like and alternate. Heads solitary or few, 2–3 inches broad, involucre hemispheric, its bracts ovate, acute or obtuse, fringed with hairs; disc brown or purple; rays 15–25, light yellow.

Frequent along the railway in the valley of the Kicking Horse River and in the valley of the Columbia at Beavermouth; flowering in August.

Helianthus Nuttallii Torr and Gray. *Nuttall's Sunflower.*

Stem smooth, except the summit which is soft-hairy, slender, mostly simple, 2–4 feet high. Leaves rough on both surfaces, lanceolate or the upper linear, 3–6 inches long, $\frac{1}{4}$–$\frac{3}{4}$ of an inch wide, frequently opposite, serrulate or entire. Heads $\frac{1}{2}$ an inch high, scattered; bracts of the involucre linear-lanceolate with a subulate tip, hairy at the base;

wide, acute at the apex, n[illegible]t the base, the lower ovat[illegible]led, the [illegible] solitary or few, 2–3 inches broad, in [illegible] [illegible]; disc brown or purple; rays 15–25, light yellow.

Frequent [illegible] flowering in August.

Helianthus Nuttallii Torr and Gray. *Nuttall's Sunflower.*

Stem smooth, except [illegible] mostly simple, 2–4 [illegible]. Leaves rough on bot[illegible] lanceolate or the [illegible] 2–5 inches long, 1–4 [illegible] bracts of the involucre linear-lanceolate [illegible]

a Erigeron aureus Greene. Golden Fleabane.
b Gaillardia aristata Pursh. (3/5 Nat.)
Great Flowered Gaillardia.

rays narrow, acute, deep yellow, 1–1½ inches long.

In moist grounds and on river banks throughout the Rockies at the lower altitudes; flowering during July.

Gaillardia aristata Pursh. *Great-flowered Gaillardia.*

Rough-hairy, stems simple or little branched, 1–3 feet high. Leaves firm, densely and finely hairy, the lower basal ones petioled, oblong or spatulate, laciniate-pinnatifid or entire, mostly obtuse, 2–5 inches long; upper leaves sessile, lanceolate or oblong, entire or dentate, rarely pinnatifid. Heads 1½–4 inches broad, long peduncled; bracts of the involucre, spreading, lanceolate, acuminate, rough-hairy, rays 10–18, bright yellow, wedge-shaped, deeply 3-lobed; disc reddish-purple.

One of the most showy of the midsummer plants, in the lower valleys of the Rockies, in dry ground and on slopes, especially in the Bow Valley at Banff and in the open country around Golden.

Arnica cordifolia Hook *Heart-leaved Arnica.*

Somewhat hairy, stem simple or sparingly branched, 1–2 feet high. Leaves hairy, the basal ovate or orbicular, obtuse or acute, deeply cordate at the base, dentate, 1–3 inches long with slender sometimes margined petioles; stem leaves in 1–3 pairs, ovate or oblong, sessile or short-petioled, much smaller. Heads 1–8, 2–3 inches broad, bracts of the involucre, acute or acuminate, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long; rays 12–16, deep yellow, an inch or more long, toothed at the apex; pappus white.

In woods and thickets at the lower altitudes throughout the Rockies; flowering in June.

Arnica gracilis Rydb. *Slender Arnica.*

Smooth, slender and branched 6–12 inches high. Leaves with short glandular hairs on both surfaces or smooth, the basal broadly ovate, petioled, dentate, 3-ribbed; stem-leaves about 2 pairs, similar, the upper sessile. Heads several on slender glandular peduncles, disc $\frac{1}{2}$ an inch or less

a Arnica cordifolia (Hook.) Heart-Leaved Arnica.
b Arnica louiseana Farr. Pale-Flowered Arnica. ($^{3}/_{5}$ Nat.)

high; involucral bracts, 12–15, lanceolate, acuminate, glandular-hairy as are also the seeds; pappus white; rays about ¾ of an inch long, narrow, bright yellow with a single notch at the apex.

On alpine slopes throughout the Rockies; flowering in July, not common.

Arnica latifolia Bong. *Broad-leaved Arnica.*

Minutely hairy or nearly smooth, simple or branched. Leaves thin, nearly smooth, or with long scattered hairs; the lower cordate; stem leaves in 2–3 pairs, equal, ovate or oval, sharply dentate, closely sessile by the broad base, or the lowest with contracted bases. Heads ¾ of an inch high on long, slender, hairy peduncles; involucral bracts ½ an inch or more long; oblong-lanceolate, acuminate, with scattered hairs, rays yellow, ¾ of an inch long, with 2 notches at the apex; achenes nearly smooth; pappus white.

Throughout the region in woods and open ground usually at an elevation of 5000 to 7000 feet; flowering during July.

Arnica Chamissonis Less. *Chamisso's Arnica.*

From lightly hairy to densely so or nearly smooth, 1–2 feet high. Leaves rather thin, hairy, oblong to oblong-lanceolate, dentate or denticulate, acute or obtuse, lowest tapering into a margined petiole, upper broad at the base and somewhat clasping. Heads ½ an inch or more high, single or several on hairy peduncles; involucral bracts ⅓ of an inch or more long, oblong-lanceolate, acuminate, glandular-hairy; rays bright yellow, ½ an inch or more long with a single notch at the apex, rather broad; achenes with a few scattered hairs; pappus tawny.

On the borders of streams and wet places at the lower altitudes throughout the region; flowering in July.

Arnica louiseana Farr. *Pale-flowered Arnica.*

Slender, hairy, 3–8 inches high. Leaves in about 3 pairs, the two lowest at the base of the stem, 1½–2 inches long, elliptical or obovate, entire or denticulate, glandular-hairy on both surfaces, as are the

margins. Heads of flowers, 1–3, nearly half an inch broad, on long, slender, nodding, hairy peduncles; rays 8–10, light yellow, about ½ an inch long; involucre ⅓ of an inch high, campanulate, densely glandular-hairy at the base, brownish-purple, the bracts lanceolate, acute, with scattered white hairs; pappus white.

Among loose stones at the base of Mt. Fairview at Lake Louise; flowering in July.

Arnica fulgens Pursh. *Alpine Arnica.*

Glandular-hairy throughout, 8–12 inches high. Leaves oblong lanceolate to lanceolate, acute, the lower denticulate and petioled, the upper sessile and entire. Heads of flowers several on long, slender, glandular-hairy peduncles; involucres campanulate, ½ an inch high, bracts lanceolate acute, glandular and with long white hairs; rays bright yellow ¾–1 inch long, ¼ of an inch wide, twice notched at the apex; achenes hairy; pappus white.

On stony alpine slopes at the higher altitudes throughout the Rockies; flowering in July.

Arnica eradiata (A. Gray.) Heller. *Rayless Arnica.*

Densely soft-hairy throughout; simple or branched, 12–18 inches high. Leaves oblong, ovate-lanceolate or the upper ones lanceolate, obtuse or acute, entire or sharply denticulate, 1–3 inches long. Heads of flowers on short, hairy peduncles, without rays; involucre ½ an inch high, bracts lanceolate, acute; achenes black, smooth or nearly so; pappus tawny.

On grassy alpine slopes through the Rockies at the higher elevations; flowering in July.

Senecio pseudaureus Rydb. *Western Golden Ragwort*

Smooth from a creeping root-stock, 1–2 feet high. Leaves smooth, basal broadly ovate, somewhat cordate, serrate, 1½–3 inches long, long-petioled; stem leaves more or less laciniate at the base, the upper sessile. Heads of flowers ⅓ of an inch high in a flat-topped corymb, rays bright orange-yellow, ⅓ of an inch long.

In moist ground and borders of woods and slopes throughout the Rockies at the

lower altitudes; flowering during June and early July.

Senecio discoideus (Hook.) Britton. *Northern Squaw-root*

Smooth except for the small tufts of wool in the axils of the lower leaves; stem rather stout, 1–2 feet tall. Basal leaves oval or ovate, thin, sharply dentate, abruptly narrowed into petioles longer than the blade; stem leaves few, small, more or less irregularly cut. Heads few or numerous, corymbose; bracts of the involucre narrowly linear, nearly ½ an inch high; rays very short or wanting; achenes smooth.

Frequent throughout the Rockies on river shores and borders of woods and thickets; flowering in July.

Senecio flavovirens Rydb. *Western Balsam Groundsel.*

Light or yellowish-green, slender, woolly in tufts at the base of the leaves or smooth in age; stem 12–18 inches high, striate, pale. Leaves 1–3 inches long, at the base obovate or broadly oval, generally tapering into the petiole but some-

times truncate at the base, obtuse, crenate or sinuate, light green; lower stem-leaves lanceolate in outline and petioled, the upper lanceolate or linear and sessile, deeply pinnatifid with narrow oblong or linear segments, cymes contracted, corymbose. Heads ¼ of an inch or more high; bracts linear, acute, yellowish-green and occasionally with brownish tips; rays pale yellow, ½ an inch long, 4-nerved or often lacking.

In the lower valleys of the Rockies, on the borders of woods, thickets, and marshes; flowering in July.

Senecio canus Hook. *Silvery Groundsel.* Permanently silvery-hairy with felted hairs; stems several, 6–12 inches high from a woody base. Leaves sometimes all undivided, the radicle and lower from spatulate to oblong or roundish-oval, ½–1½ inches long, slender-petioled, sometimes laciniate-toothed, or pinnatifid. Heads of flowers few and terminal, ⅓ to nearly half an inch high; rays yellow, nearly ½ an inch long.

In stony dry ground and slopes throughout the Rockies at the lower altitudes; flowering in June.

Senecio lugens Richards. *Black-tipped Groundsel.*

More or less woolly when young, soon smooth; stem stout, 1–3 feet high. Basal and lower leaves oblong or oval, obtuse or acute, denticulate or dentate, 2–5 inches long, ½–1½ inches wide, narrowed into margined petioles; upper leaves few, sessile, small and bract-like. Heads of flowers several or numerous, corymbose, often short-peduncled, ½ to nearly an inch broad; involucre campanulate, ¼–⅓ of an inch high, its bracts lanceolate to oblong-lanceolate, acute, green with conspicuous black tips; rays 10–12, bright yellow, ½ an inch long.

In moist soil at the lower altitudes throughout the Rockies; flowering in June.

Senecio triangularis Hook. *Giant Ragwort.*

Rather stout, simple, 2–5 feet high. Leaves thin, all more or less petioled and dentate, deltoid-lanceolate or the lower

triangular-hastate or deltoid-cordate, the uppermost lanceolate, with cuneate base. Heads of flowers about ½ an inch high, numerous in a flat open cyme; involucre campanulate; rays 8–12, bright yellow, oblong-linear, ¼–⅓ of an inch long.

In wet ground and along the borders of streams and wet slopes at 5000 to 6000 feet elevation throughout the Rockies; at much lower altitudes in the Selkirks where it is a very abundant plant; flowering in June and early July.

Petasites palmata (Ait.) A. Gray. *Palmate-leaved Coltsfoot.*

Scape slender and scaly, 6–24 inches high. Leaves nearly orbicular in outline, 3–12 inches broad, deeply 7–11-cleft to much beyond the middle, green and smooth above, densely white-woolly beneath, at least when young; the lobes oblong to obovate-acute, often somewhat wedge-shaped, sharply dentate or cut. Heads mostly dicœcious, numerous, corymbose, ⅓–½ an inch broad;

flowers usually white, fragrant, the marginal ones of the pistillate heads with narrow pinkish or white rays about $\frac{1}{4}$ of an inch long; cottony in fruit.

In wet places and along streams at the lower altitudes throughout the Rockies; flowering in May and early June before the leaves appear.

Petasites sagittata (Pursh.) A. Gray. *Arrow-leaved Coltsfoot.*

Scape slender and scaly, 6–12 inches high. Leaves deltoid-ovate or reniform-ovate, persistently white-tomentose beneath; smooth or nearly so above 4–10 inches long, thin, margins sinuate-dentate, not cleft or lobed. Heads dicœcious, loosely corymbose, involucre campanulate, $\frac{1}{3}$ of an inch high; flowers nearly white, the marginal ones of the pistillate heads with white rays.

In similar situations to the preceding; in wet places and along streams at the lower altitudes throughout the Rockies; readily distinguished by the shape of its leaves; flowering in May and early June.

Petasites frigida (L.) Fries. *Arctic Coltsfoot.*

Scape very scaly, 3–10 inches high. Leaves thin, hastate-reniform to triangular-ovate, 1–4 inches long, irregularly and angulately lobed and incised, smooth and green above, persistently white-woolly beneath, the lobes entire or few-toothed. Heads usually few, ½ an inch or more high in a capitate corymb; involucre short, campanulate; flowers nearly white and fragrant, the marginal ones of the pistillate heads with white or pinkish rays ¼ of an inch or more long.

In shaded wet places and along alpine brooks at the high altitudes throughout the region; flowering during June and July with the expanding leaves.

Achillea lanulosa Nutt. *Yarrow.*

Woolly throughout; stems simple, 6 inches to 2 feet high. Leaves narrowly oblong in outline, bi-pinnately dissected into numerous small linear divisions. Heads numerous, crowded into a rather contracted cyme;

involucre oblong, nearly ¼ of an inch high; bracts lanceolate, green with brown translucent borders; rays 4–5, white, broadly obovate, notched and spreading, about the length of the involucre.

Open ground, slopes and meadows throughout the region; flowering during July.

Chrysanthemum leucanthemum L. *Ox-eye Daisy. White Daisy.*

Smooth, simple, 1–3 feet high, often tufted, the branches nearly erect. Leaves smooth, the basal oblong or spatulate, coarsely dentate or incised, narrowed into long, slender petioles; stem-leaves mostly sessile or partly clasping, 1–3 inches long, linear, pinnately-incised or toothed, the uppermost small, nearly entire. Heads few or solitary, 1–2 inches broad on long naked peduncles, rays 20–30, white and spreading; disc flat, bright yellow, bracts of the involucre lanceolate or obtuse, smooth with translucent margins.

In open ground throughout the region; flowering during July.

Artemisia frigida Willd. *Pasture Wormwood.*

Simple or branching, silky-hairy and silvery throughout; stems numerous and spreading, about a foot high. Leaves mainly twice ternately divided into linear crowded lobes. Heads globular, about $\frac{1}{8}$ of an inch in diameter, numerous, in more or less racemose heads; involucre pale, greenish-yellow, woolly; bracts narrow and herbaceous.

In open dry ground and on banks throughout the Rockies at the lower altitudes; flowering in July.

Artemisia discolor Dougl. *Green Wormwood.*

Stems slender, 9–12 inches high, spreading from a woody base. Leaves pinnately parted into narrow, linear or lanceolate, entire or spreading cut divisions and lobes, white beneath with cottony hairs, green and nearly smooth above. Heads $\frac{1}{8}$ of an inch high, numerous in a wand-like panicle; involucre hemispherical-campanulate, greenish and smooth or nearly so, 20–30 flowered.

On Rocky slopes throughout the region; flowering in June or July.

Antennaria lanata (Hook.) Greene. *Alpine Everlasting.*

Densely white-woolly; stem simple, 2–6 inches high. Lower leaves spatulate-lanceolate, 1–1½ inches long, the upper linear with conspicuous papery tips. Heads several in a close cluster at the end of the stem, ½ an inch high; involucre nearly ¼ of an inch high, conspicuously woolly at the base, the inner bracts with conspicuous white tips, the outer straw-colour or greenish.

An alpine plant in meadows and on slopes from 7000 feet up; flowering during July.

Antennaria pulcherrima (Hook.) Greene. *Tall Alpine Everlasting.*

White-woolly throughout, stem simple, 6–18 inches high. Leaves spatulate to lanceolate or linear, 1–4 inches long, acute, nerved. Heads numerous in a close capitate cluster, ½–1 inch high, outer bracts of the involucre straw-colour or

greenish, rounded and often notched at the apex; inner ones nearly white.

In moist open ground in the Rockies at the lower elevations; flowering in July.

Antennaria racemose Hook. *White Everlasting.* Lightly woolly, becoming smooth, stems 6–20 inches high, slender, sparsely leafy. Leaves thin, the radicle broadly oval, an inch or two long, obscurely 3-nerved at the base, rather veiny, the lower stem leaves oblong, the upper smaller and lanceolate. Heads of flowers about ¼ of an inch high, all on slender peduncles in a loose raceme, involucral bracts, thin and translucent, greenish-yellow or brownish.

On shaded slopes throughout the Rockies, at the higher altitudes; flowering in June.

Antennaria Howellii Greene. *Howell's Everlasting.* More or less woolly; stem 6–10 inches high. Leaves rather thin, the lower spatulate, acute, 1–2 inches long, green above, woolly beneath; stem leaves lanceolate, clasping, 1 inch long, becoming smaller

toward the summit. Heads in a compact capitate cluster, ½ an inch or more in diameter, woolly at the base; involucral bracts very narrow, acute, thin, and translucent, straw-colour, the outer ones densely woolly and occasionally rosy.

In dry ground and on slopes, frequent in the Rockies at the lower altitudes.

Antennaria parvifolia Nutt. *Mountain Everlasting.*

Plant silvery throughout, freely spreading; stems prostrate and leafy, forming mats of considerable extent; flowering stems 2–8 inches high. Leaves from obovate to spatulate, ½ an inch or less long, persistently white-woolly. Heads in compact terminal clusters about ⅓ of an inch broad; involucral bracts, lanceolate, obtuse, thin and translucent, yellowish.

In dry sterile ground at the lower altitudes throughout the Rockies; flowering in June, frequently growing with the next species which it closely resembles in manner of growth.

Antennaria rosea (D. C. Eaton) Greene. *Pink Everlasting.*

Silvery throughout, stems prostrate and leafy, forming broad mats; flowering stems 6–15 inches high. Leaves very thin in texture, densely hairy, lanceolate to linear, ½–1½ inches long, acute. Heads small, closely compacted into a rounded terminal cluster, ½ an inch or more in diameter; involucral bracts in 2 series, lanceolate, the outer greenish and woolly, the inner from pink to bright rose-colour.

In dry sterile or moist open ground throughout the Rockies up to an elevation of 6,000 feet; flowering in June and July.

Anaphalis subalpina (A. Gray) Rydb. *Pearly Everlasting.*

A foot or two high in tufts, very leafy, the white tufts of woolly hairs rarely becoming tawny. Leaves 2–5 inches long, broadly lanceolate, green above, white-woolly beneath. Heads numerous, ¼ of an inch high in a contracted corymb; involucral bracts numerous, ovate-lanceolate, pearly white, spreading in age.

Abundant throughout the region in dry or moist ground and on slopes up to an altitude of 7000 feet; flowering in June and July.

Carduus Kelseyi Rybd. *White Thistle.*

Stems 18 inches to 4 feet tall, striate, more or less cobwebby-woolly. Leaves linear, sinuately toothed and fringed, with rather weak spines, green above, cottony beneath. Heads several in a leafy spike, 1–1½ inches high, subtended by linear, cut and bristly-fringed and cobwebby-hairy leaves; bracts rather unequal, lanceolate, a few of the outermost with weak spines, the rest unarmed but with a long slender tip; corolla cream-colour.

Open ground and on slopes at the lower altitudes throughout the Rockies; flowering in July.

Carduus undulatus Nutt. *Wavy-leaved Thistle.*

Persistently white tomentose, 1–3 feet high, branching. Leaves rarely pinnately parted, moderately prickly. Heads of flowers about 1½ inches high, usually solitary at the ends of the

branches; principal bracts of the involucre mostly thickened on the back by the broader glandular-sticky ridge, comparatively small and narrow, tipped with a short spreading prickle; corollas rose-colour or pale purple.

In open grounds throughout the Rockies at the lower altitudes; flowering during July and August.

Saussurea densa Hook. *Saussurea.* Nearly smooth, with a decumbent base; 3–12 inches high. Leaves thin, oblong-lanceolate, acuminate, sinuate-dentate, or entire. Heads of flowers several in a compact terminal corymb, involucre campanulate, $\frac{1}{2}$ an inch high; bracts lanceolate, acuminate, nearly equal; corolla purple or violet-blue.

On stony slopes or on the moraines at the higher altitudes throughout the Rockies, not common, but freqeunt in the region around Lake Louise; flowering during July.

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